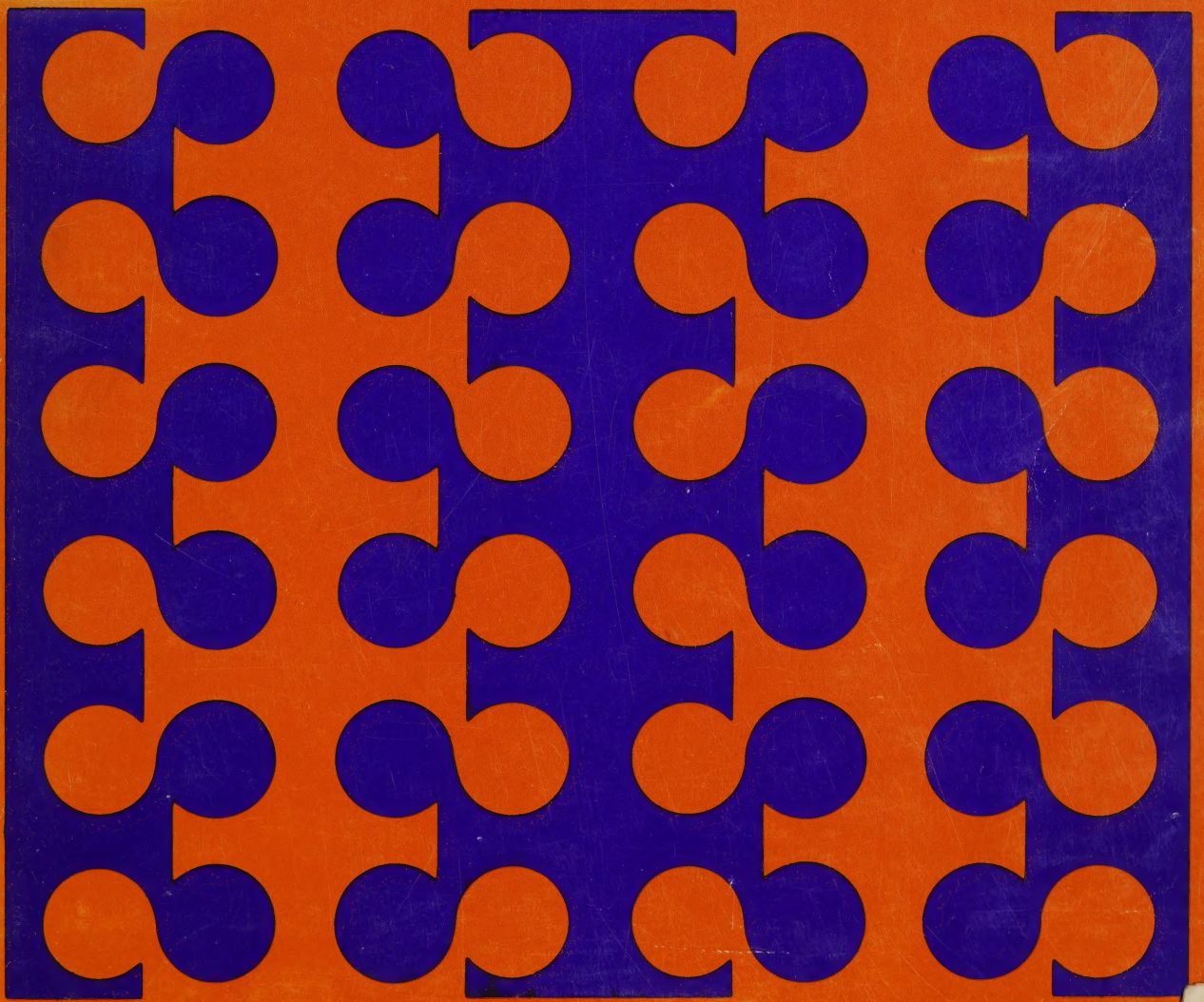
THE UTILIZATION OF ELECTRONIC TECHNOLOGY IN POST-SECONDARY EDUCATION IN BRITAIN AND WEST GERMANY

[Report and studies]

Ontario

Commission on Post Secondary Education in Ontario



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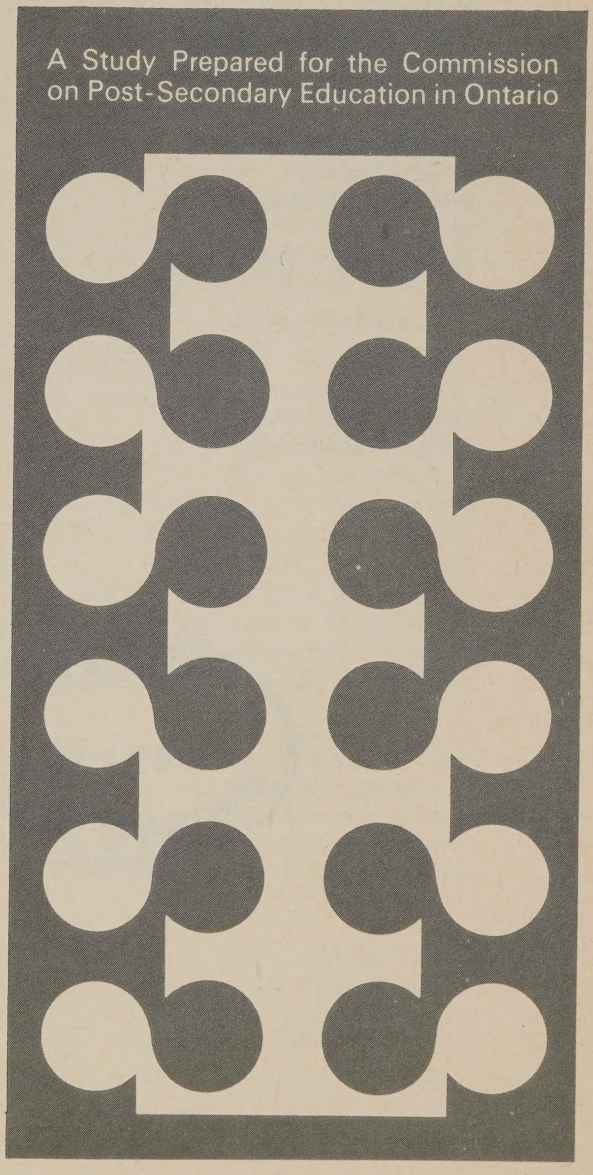
A Study Prepared for the Commission on Post-Secondary Education in Ontario



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The Utilization of Electronic Technology in Post-Secondary Education in Britain and West Germany

Editorial Foreword

The Commission was required by its terms of reference to study and make recommendations on "the type, nature and role of the institutions required to meet the educational needs of the Province with particular reference to existing institutions and their ability to meet present and future demand. . . ." Because of the widespread interest evinced by educational authorities everywhere during the 1950s in the possible use of television to supply educational services, and the serious re-thinking of these possibilities that has gone on more recently, it became apparent that the Commission would have to consider very carefully the possible role for this new technology in post-secondary education in Ontario. One suggestion that had already been made in the early 1960s, for example, was that television might be used to alleviate the effects of an anticipated shortage of qualified university faculty. (See the "Deutsch Report", *Post-Secondary Education in Ontario, 1962-1970: Report of the Presidents of the Universities of Ontario to the Advisory Committee on University Affairs, 1962.*)

At an early stage of its work, the Commission was fortunate in having access to *Television and Technology in University Teaching (1970),* a study prepared by Mr. Bernard Trotter for the Committee on University Affairs and the Committee of Presidents of Universities of Ontario. Among its other recommendations, the Trotter Report tentatively proposed creation of a new kind of post-secondary education delivery system in Ontario reflecting the experience with the new Open University then being launched in Britain. Such a new institution was described (pages 43 and 44) as being ". . . newly created as an academically self-governing degree-granting body with the express function of offering a new kind of general degree program." The new institution would be decentralized, with instruction based on "carefully designed instructional materials produced by course teams of the best qualified people available . . ." along the lines being tested by the Open University in Britain.

Because of the evident importance of the British experience to the approach being discussed for Ontario, and because of the possible relevance of similar experience in other countries abroad, the Commission subsequently set about collecting more information about these experiences, directly through the Commissioners' own program of study visits and also by means of the background study now being published.

The Commission was fortunate in obtaining the services of Mr. Neil McLean to undertake this study. Mr. McLean's background includes experience both as a classroom teacher in a variety of institutions, among them the University of Toronto Schools, and also in educational television where he has most recently been Head Of Development for the Metropolitan Educational Television Association. Mr. McLean has also been a director of several television and film organizations and President and Chairman of the Board of Directors of the Educational Television and Radio Association of Canada.

The purpose of the present study was to elaborate on and to provide up-to-date information about the British and West German experiences with the utilization of

electronic technology in post-secondary education. Specifically the study was intended to provide descriptions of the "Open University" in Britain and of "Telekolleg", "Funkolleg", and the "Institute for Remote Studies in West Germany"; to outline the historical development of these systems; to assess their financial aspects; and to indicate particular problems they have encountered, especially any that were previously unrecognized. Britain, West Germany and Ontario are all, as the author notes in his introduction, technically advanced societies having well-developed educational and communications systems. In all three jurisdictions, the more traditional institutions of post-secondary education are well established, while at the same time, the adequacy and future role of these institutions for supplying educational services are being subjected to a close examination, especially with respect to their suitability for providing more widely accessible forms of continuing educational services.

The results of this investigation, summarized in Chapter IV, will go far to dispel many of the exaggerated hopes engendered by the "discovery" of educational television in the 1950s, and also the more extreme forms of disillusionment which have been manifested with it more recently. The Commission's own proposals in its ***Draft Report*** concerning the "University of Ontario" must be considered against the background of the British and West German experience reported here. In particular, the specific lessons of this experience should be taken into account, including the demonstrated importance of articulating the educational purposes of such schemes before deciding on the relevant methods of achieving them, the critical need for co-ordination among the several private and public agencies involved, the many issues raised by "open" institutions with respect to the "certification" function of post-secondary education, and the problem that remains of getting lower-income and rural groups to utilize the services provided by even the most "open" of educational facilities.

A STUDY OF THE UTILIZATION OF ELECTRONIC TECHNOLOGY IN POST-SECONDARY EDUCATION IN BRITAIN AND WEST GERMANY

Prepared for

The Commission on Post-Secondary Education in Ontario

by Neil McLean

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A Study of the Utilization of Electronic Technology in Post-Secondary Education in Britain and West Germany

Introduction

This study of the utilization of electronic technology in "post-secondary" education in Great Britain and the Federal Republic of Germany attempts to describe three major projects: TELEKOLLEG in Bavaria; the Open University in Britain; and Funkkolleg, in West Germany. Included with the description of Funkkolleg is an introduction to the activities of the German Institute for Remote Studies.

In accordance with the request of the Commission on Post-Secondary Education in Ontario, the sections on all three projects provide, in addition to a description of the project, an introduction to the background of each, an indication of some of the costs involved, and references to problems which have become manifest during development.

Each of the projects could be described as a "major experiment," as opposed to a limited pilot project, inasmuch as the "student body" to which each is offered has not been limited by predetermined sampling criteria. In the course of each project, certain limitations on the acceptability of candidates for full registration have developed, either explicitly or implicitly, but these

limitations are not those associated with statistical sampling.

The relevance of TELEKOLLEG, the Open University, and Funkkolleg for the future of post-secondary education in Ontario might be questioned. Each project has been developed within a particular set of economic, social and educational circumstances which differ from those in Ontario. However, while particular conditions may not be the same, the general situations are similar.

Britain, West Germany, and Ontario are technically advanced societies in the Western tradition, with relatively well-developed systems of education and communications. The accessibility of educational opportunity has become increasingly important in all three areas, as the common concern about "continuous learning" would indicate. The institutions of post-secondary education are strong in each area, and similar questions regarding their present contributions and future roles are being raised.

This study, therefore, may prove most useful if it is used as an introduction to the solutions which have been developed for problems in particular British and German educational situations which themselves have arisen within educational systems not essentially unlike that in Ontario.

Chapter I: TELEKOLLEG

A. Historical Development of TELEKOLLEG

1. General

In his introduction to the sociological studies of Courses I and II of TELEKOLLEG I, Hans Schiefele described the origins of the project. "The plan to establish TELEKOLLEG originated with people who were educationally-politically informed and involved. Although their decision was based essentially on sociological research findings, the project itself was not worked out scientifically in advance, but rather undertaken as an educational-political risk."[1]

While some risk may have been involved in the inauguration of TELEKOLLEG, which began in January, 1967, the idea of the extensive utilization of television for educational purposes was not new in any world-wide sense. Major projects were already under way in Poland, East Germany and Russia.[2] Moreover, TV College in Chicago and the programs of NHK, the Japanese Broadcasting Corporation, had provided educational offerings through radio and television combined with correspondence, some of them preceding the Eastern European experience.

In an article in Educational Broadcasting Review, Dr. Burton Paulu had used the title "Europe's Second-Chance Universities," but with the exception of Britain's Open

University, which began its first telecasts in January, 1971, none of the projects which he described were complete universities. The Polish experience approximated more closely an extension of preparatory correspondence work for adults, i.e., preparatory to university studies. The East German presentations fall more readily into the category of vocational interest courses for adults, or supplementary technical training. The Russian programs described by Dr. Paulu were used to "supplement class work in schools and colleges as well as for adult education." The use of the expression "second-chance university," therefore, is rather misleading.

In a sense, the level of opportunity provided by TELEKOLLEG does not fit into the concept of post-secondary education as traditionally perceived. However, because the potential of electronic telecommunications technology has led to a reassessment of "education," TELEKOLLEG deserves to be considered. Not only does it provide a good example of procedures and techniques in education, it also raises a host of questions which may be valuable for the field of post-secondary studies. How, for example, should the term "adult" be considered? Physiologically, meaning post-puberty? Economically, implying full-time employment or unemployment? Legally, after age 18? What does "second-chance" mean - that the first chance was missed, or that

it didn't exist? Does the expression "post-secondary" suggest a tertiary level of education, and, if so, does it presuppose primary and secondary studies? Are post-secondary educational experiences academic, or can they include non-academic work? Should education, as for example in a "second-chance university," try to make up for unavailable or unsuccessful experience in the past, or should it try to provide for future needs? The TELEKOLLEG experience provides one set of answers to some of these questions.

2. Particular

The constitution of the State of Bavaria provides that every inhabitant of Bavaria shall have the right to receive an education commensurate with his ability and his personal vocation, according to his achievement and wishes, but not according to the social or economic position of his parents. However, since ability has always tended to be measured in terms of success in school, there was a natural tendency to develop an elitist system of education, effectively contradicting the intent of the constitution. The initiators of TELEKOLLEG therefore sought to provide opportunities for those whose socio-economic position and background made it more difficult for them to demonstrate their ability. The criteria for identifying groups which might be "educationally disadvantaged"

were the socio-economic position of the parents, the education of the parents, and the "social distance"[3] of the home from educational opportunity. In some cases, this social distance corresponded to geographic distance.

The intention of TELEKOLLEG was to provide a more effective "first-chance" educational opportunity by overcoming socio-economic and regional barriers. Television (or radio) recognizes few geographic limitations and, except in those areas where reception is difficult or impossible, provides a means of overcoming regional disparities. Since the inception of TELEKOLLEG, new transmitters have been or will be installed to fill gaps in the transmission pattern.

The groups which seemed most likely to suffer from unavailable or unexploited traditional educational opportunity were the working-class and agricultural segments of the population, and it was to these groups that the educational opportunities of TELEKOLLEG were to be offered. For this reason, the actual subject material of TELEKOLLEG has been that of the vocational continuation school.

Through the support of the Volkswagen Foundation, it has been possible to conduct continuing research on the development of TELEKOLLEG, so that the project has served not only as an effective intervention in the fulfilment

of ongoing educational responsibilities, but also as a pilot project from which lessons can be drawn for future application. Two general lines of research are followed. Broadly, the first of these concerns itself with sociological questions - the composition of the TELEKOLLEG student body, the attitudes and aims of participants, etc. - while the second is occupied with "paedagogical" questions such as the establishment of criteria for effective television presentations and the effective integration of television with support materials.

B. Organization and Structure of TELEKOLLEG

1. General

TELEKOLLEG is a co-operative undertaking between the Bavarian Broadcasting Corporation (Bayerischer Rundfunk) and the Bavarian Ministry of Education. To safeguard the constitutional independence of the broadcasting organization from an instrument of the government, a formal contract between Bavarian Broadcasting and the Ministry of Education was signed in November, 1966, under the terms of which a division of responsibilities was accepted. Of the three components of TELEKOLLEG - television presentations, printed material, and group discussions - the Bavarian Broadcasting Corporation accepted responsibility for the preparation and transmission of the television presentations, and the preparation of the printed material, while the

Ministry of Education organizes and provides for the conduct of the group discussions and tutorial sessions (Kollegtagen). The responsibility for the examination of candidates and for the granting of certificates of achievement lies with the Ministry of Education.

Lasting approximately two and a half years, TELEKOLLEG I courses have been and are being presented as follows:

Course I	January, 1967 to November, 1969
Course II	September, 1967 to November, 1969
Course III	January, 1969 to May, 1971
Course IV	January, 1971 to July, 1973

The first course of TELEKOLLEG II will begin in September, 1972.

2. The Television Presentations

The television programs, each of which is approximately 30 minutes long, provide the core material for TELEKOLLEG. Table I-1 provides a typical weekly schedule for the transmission of programs for Course IV, on the Third Channel (Educational) of Bavarian Broadcasting. The Third Program is carried on a network of about eighty UHF transmitters in Bavaria.

In addition, one-half hour per week is usually devoted to information about the course and articles or news of interest to TELEKOLLEG participants.

TABLE I-1

A Typical Weekly Schedule of

TELEKOLLEG I Television Programs

	Mon.	Tues.	Wed.	Thur.	Fri.	Sat.
6:00 pm	---	---	---	---	---	German
6:30 pm	History	English	Mathe-matics	Biology	Physics	History
7:00 pm	English	Mathe-matics	Biology	Physics	German	---

3. Printed Materials

A more adequate description of the supplementary information available to TELEKOLLEG participants would be support materials, as they include not only books, but also language records and audio tapes.

The TELEKOLLEG Support Book for economic geography[4] provides examples of the different kinds of work for which the printed material is designed.

a) Preparatory and pre-program material for economic geography includes definitions included in the Glossary.

b) As work to be completed during the program, the economic geography support book contains an outline map at the beginning of the material on each lesson. Also, for German, there are usually one or two pages of incomplete statements which students complete during the program. Typically,

these are simple sentences which contain the main points of the lesson.

c) Work which students complete on their own after the program may consist of a review of the main points of the lesson, (up to ten pages), and exercises and test sheets. In German, for example, a typical exercise is the writing of a letter of application for a position.

d) Test sheets provide opportunities for evaluation, and are usually submitted to tutors during the College Day sessions.

4. The College Days (Kollegtagen)

The College Days were conceived originally not as group-work sessions or seminars, but rather as opportunities to overcome difficulties and reinforce learning gained through the television viewing experience. They take place once every three weeks, usually on Saturday mornings, for a period of about five hours, in a locality not too far from the student's home. The groups of from 15 to 20 students are conducted by teachers (approximately 800) hired by the Ministry of Education for this purpose.

One of the initial problems which TELEKOLLEG faced was a lack of co-operation by these tutors, growing primarily out of the fact that they had not been effectively prepared for their work. Some considered themselves to be somehow in competition with the television presentations,

rather than facilitators of each individual student's learning. This problem illustrates the need for a clear understanding on the part of all the staff involved in such a project of the role and responsibilities of each individual and each component.

5. Summary

One of the most important research studies undertaken to date by TELEKOLLEG in the area of inter-personal relationships has dealt not with the College Day procedures, but with the relationship between the television instructor and the individual TELEKOLLEG participant. This reinforces the impression that television is by far the most important component of TELEKOLLEG, and that the support materials and College Day activities are designed to supplement and reinforce the basic learning experience provided through television.

TELEKOLLEG, therefore, could be characterized as "televised instruction."

C. Courses Offered by TELEKOLLEG

The course content of TELEKOLLEG I parallels closely that of the Berufsaufbauschule, the vocational continuation school, which provides opportunities for a student body composed generally of people in their late teens who have completed only the nine years of compulsory public school

education, and who wish to reach the so-called Middle Level of vocational education. In the traditional approach, this has consisted generally of two or more years of part-time study (evening and Saturday morning schools), followed by one year of full-time study. The offerings of the vocational continuation school are essentially job-oriented and pragmatic in nature, although subjects such as history are also given. Table I-2 provides an overview of the subjects offered in TELEKOLLEG I.

TABLE I-2

Course Offerings, TELEKOLLEG I,

Course IV (from January, 1971)

	Subject	No. of Lessons	Trimesters total	Trimesters number
1.	German	78	6	I - VI
2.	English	78	6	I - VI
3.	A. History	52	4	I - IV
	B. Bavarian History	6	Part of 1	1st pre-exam trimester
	C. Social Studies (Sozialkunde)	13	1	IV
	D. Economic Geography	13	1	V
	E. Domestic Economics	13	1	VI
4.	A. Mathematics	78	6	I - VI
	B. Practical Mathematics	13	1	VI
	C. Business Arithmetic	8	Part of 1	VI
5.	A. Physics	65	5	I - V
	B. Biology	13	1	I
	C. Chemistry	13	1	V
	D. Technical Chemistry	5	Part of 1	VI
	E. Electrotechnology	13	1	2nd pre-exam trimester
6.	A. Technical Drawing I	13	1	II
	B. Technical Drawing II	13	1	III
	Total	487		

Table I-3 indicates the organization of Course IV of TELEKOLLEG I, (based on the trimester system).

In September, 1972, and continuing until the middle of 1974, TELEKOLLEG II will be instituted to provide opportunities corresponding to those offered by the Berufsoberschule or Fachoberschule. This level, which continues on from the Fachmittelschulreife (currently offered by TELEKOLLEG I), provides for the academic segments of vocational education at approximately the level of Grade XIII. A valid comparison might also be drawn with some of the programs of the Colleges of Applied Arts and Technology in Ontario.

The following subjects, at the senior or upper level of vocational continuation school studies, will be offered in TELEKOLLEG II: German, English, history and social studies, mathematics, physics, chemistry, biology, geography, technology, and domestic and business economy (Volks-und Betriebswirtschaft). Programs in other subjects such as social paedagogy and psychology may also be provided.

Table I-4 outlines the preparation and production schedule for TELEKOLLEG II, Course I.

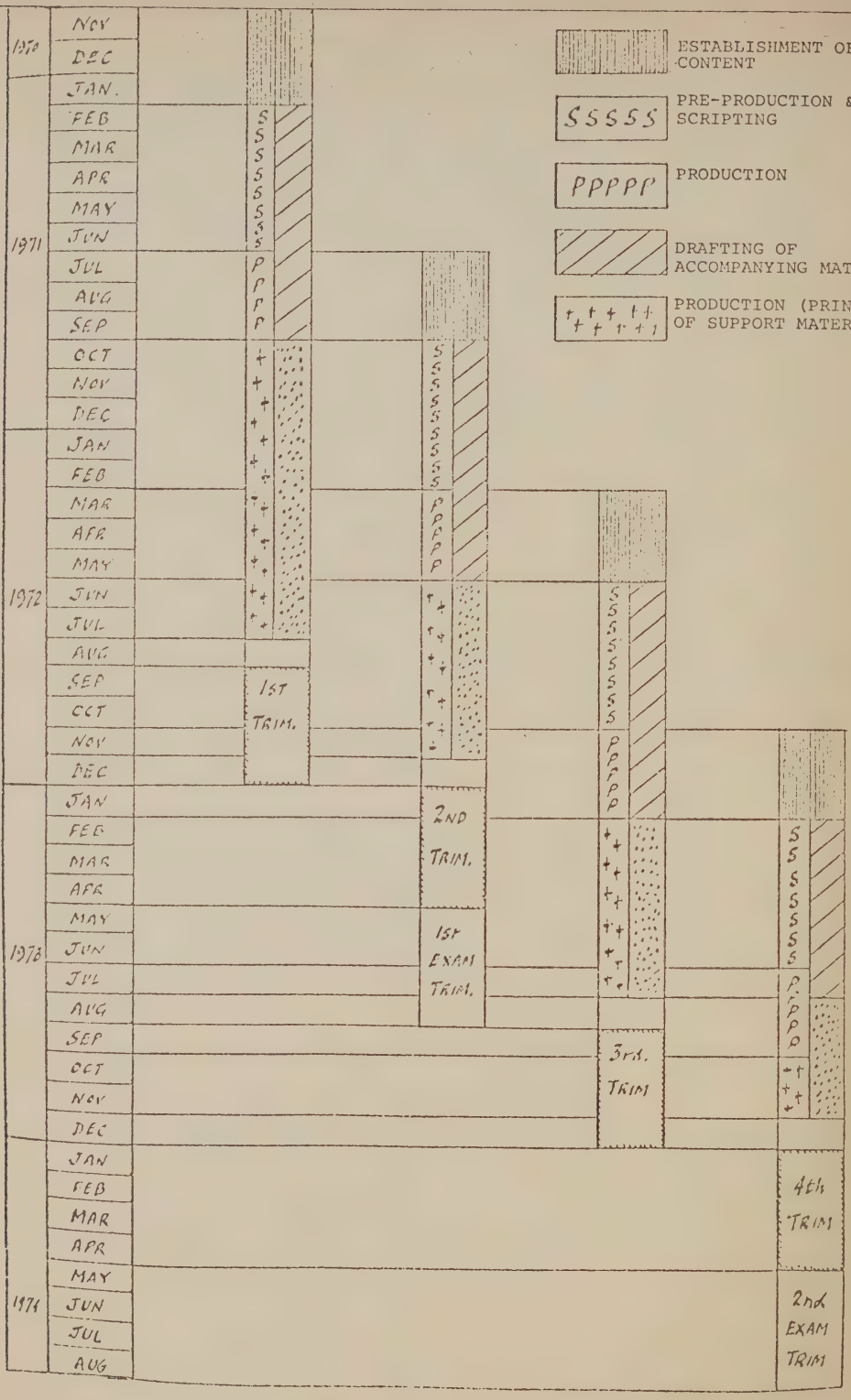
TABLE I-3 Telekolleg Course Content for Lehrgang (Course) IV

January 1971 - July 1973

First Trimester Jan.- April '71	Biology Lessons 1 - 13	History Lessons 1 - 13	Physics Lessons 1 - 13	Mathematics Lessons 1 - 13	English Lessons 1 - 13	German Lessons 1 - 13	I
Second Trimester April - July '71	Technical Drawing I Lessons 1 - 13	History Lessons 14 - 26	Physics Lessons 14 - 26	Mathematics Lessons 14 - 26	English Lessons 14 - 26	German Lessons 14 - 26	II
	SUMMER BREAK						
Third Trimester Sept.- Dec. '71	Technical Drawing II 14 - 26	History Lessons 27 - 39	Physics Lessons 27 - 39	Mathematics Lessons 27 - 39	English Lessons 27 - 39	German Lessons 27 - 39	III
Exam. Trimester Jan.- April '72	Bavarian History Lessons 1 - 6	Repeat and Transitional Pre-examination Programs					
Fourth Trimester April - July '72	Social Studies Lessons 1 - 13	History Lessons 40 - 52	Physics Lessons 40 - 52	Mathematics Lessons 40 - 52	English Lessons 40 - 52	German Lessons 40 - 52	IV
	SUMMER BREAK						
Fifth Trimester Sept.- Dec. '72	Economic Geography Lessons 1 - 13	Chemistry Lessons 1 - 13	Physics Lessons 53 - 65	Mathematics Lessons 53 - 65	English Lessons 53 - 65	German Lessons 53 - 65	V
Sixth Trimester Jan.- April '73	Domestic Economics Lessons 1 - 13	Technical Chemistry Lessons 1 - 5 Business Mathematics Lesson 1 - 8	Practical Mathematics Lessons 1 - 13	Mathematics Lessons 66 - 78	English Lessons 66 - 78	German Lessons 66 - 78	VI
Exam Trimester April - July '73	Electro-Technology Lessons 1 - 13	Repeat and Transitional Pre-examination Programs					

TABLE I-4

PREPARATION AND PRODUCTION SCHEDULE FOR TELEKOLLEG II



D. TELEKOLLEG: The Student Body

As a result of the publicity efforts of Bavarian Broadcasting in late 1966, approximately 30,000 people requested information about TELEKOLLEG, and 14,455 registered for participation in Course I, beginning January 2, 1967. Of this number, 8,500 appeared for the first College Day, and this figure fell to about 5,000 during the next three months. Approximately 4,000 people tried the first interim examinations, held from September to December, 1967, and of these, approximately 3,700 passed.

The drop of almost 6,000 people between registration and the first College Day encouraged dire and gloomy predictions about the future of TELEKOLLEG, but after the completion by 7,4[illegible] participants of a new registration-information form necessitated by data processing procedures, it was possible to identify certain factors which contributed to the large initial drop in numbers. Hans Schiefele referred to several points:[5]

1) People learned after the first television programs that even TELEKOLLEG was not a "magic machine" for learning, and that a fair amount of real work was involved.

2) Not all participants were interested in the entire program or in writing the examinations; some wanted only one course. This group did not participate in the College Days.

3) Some people wanted only an extension of their general education, and took advantage of TELEKOLLEG as a meaningful leisure activity. This group did not have to register.
4) Since there was no qualifying examination or reference to previous educational achievement, some people for whom the work was too difficult probably registered. (While it might be suggested that such people should know better than to apply, Schiefele observes that these people dropped out, in effect, against their will. If they too are to receive the opportunity to extend their learning, changes in TELEKOLLEG or in other educational offerings will be necessary.)

For the second intake in September, 1967, for Course II, a new application form was developed to provide different degrees of participation for people with different degrees of interest. These groups, which have been continued, are as follows:
Group A: "leads to vocational school qualifications and includes all subjects,"
Group B: "participation in (single-) subject courses" in association with Adult Education Centres,
and Group C: for "those who are interested."

The following is a correlation of some of the information about the TELEKOLLEG student body for Courses I, II, and III. From it emerges a picture of TELEKOLLEG's acceptance by the public, and some indications of areas in which educational opportunity could be further extended.

a) Age

Young people - teen-agers and young adults - are the most numerous participants in TELEKOLLEG. This is particularly the case in Groups A of Courses II and III. Two sub-groups of the under-30 age group - those from 15 to 19 years of age, and those in the 25-to-29-year-old category - are most heavily over-represented in relation to their proportion of the general population. The younger people were also more likely to participate in College Day activities.

Correlation with other information showed that the largest group of young people under 22 years of age lived in rural areas, while those 22 and over were more likely to be found in cities.

The much greater proportion of younger people has been interpreted as an indication of their interest in vocational training, whether during or after apprenticeship, and in opportunities for vocational advancement.

Older people participate much less in the formal activities of TELEKOLLEG, as represented in Group A. However, an increasing percentage of older people took advantage of

opportunities provided in Groups B and C.

Tables I-5 and I-6 indicate the representation of age-groups in TELEKOLLEG.

b) Sex

While the TELEKOLLEG researchers had hypothesized that the new educational offering would be particularly attractive to women, this was not the case. As in other vocationally-oriented institutions, the number of women in TELEKOLLEG was limited. Their choice of participation in groups B and C, and, as other information showed, their interest in subjects such as English, history and German, indicated a preference for non-technical non-credit subjects.

In addition, correlation of age and sex statistics indicates, for example, that there are more than twice as many women in the 40-to-49-year-old category in Group C of Course III as there are 15-to-21-year-old girls in Group A of the same course. However, it must be noted that other correlative studies showed a relatively higher proportion of women among the younger participants in Course II.

The most obvious explanation for the failure of TELEKOLLEG to appeal to women must be found in the material offered, which is directed to particularly male vocations.

Table I-7 indicates the percentages of men and women who participated in TELEKOLLEG, and provides a comparison

TABLE I-5 AGE GROUPS OF PARTICIPANTS IN TELEKOLLEG .1.

Age Group	Population of Bavaria: in 000's	Population of Bavaria: Percentage	COURSE I (from Jan.'67): All Groups: to be expected	All Groups: actual	All Groups: %	All Groups: Estimated by TK researchers (for Group A)	Group A: to be expected	Group A: actual	Group A: %	Group B: to be expected	Group B: actual	Group B: %	Group C: to be expected	Group C: actual	Group C: %	TOTALS: to be expected	TOTALS: actual	TOTALS: %
15-19	643.0	14.0	1420	2376	33.4	32.6	786	949	31.2	193	233	17.5	632	764	20.7	1611	1946	
20-21	275.8	6.0																
		16.2				16.9												
22-24	468.0	10.2	1970	2383	33.6		1082	1212	39.8	420	470	35.2	734	822	22.3	2236	2504	
25-29	806.6	17.5				25.7												
		27.7																
30-34	1302.0	28.3	2012	1733	24.4	20.0	708	721	23.7	418	426	32.0	1157	[illegible]	[illegible]	2283	2325	
35-39																		
40-44	1102.6	24.0	1704	611	8.6	4.8	241	161	5.3	306	204	15.3	1387	925	25.1	1934	1290	
45-49																		
over 50																		
no answer																		
Operating Totals			7106	7103	100.0	100.0	2817	3043		1337	1333		3910	3689		8064	8065	100%
Totals	4598.0	100.0																

TABLE I-6 AGE GROUPS OF PARTICIPANTS IN TELEKOLLEG .2.

AGE GROUP	POPULATION OF BAVARIA			COURSE III (from January 1969)													
				Group A			Group B			Group C			Totals		
	in 000's	% age		Expected	Actual	%	Expected	Actual	%	Expected	Actual	%	Expected	Actual	%
15-19	643.0	14.0	20.0	354	578	22.8	158	140	12.4	392	313	11.2	904	1031	16.0
20-21	275.8	6.0	16.2	410	624	255	24.6	182	180	56	16.0	453	290	95	10.3	1045	406	6.3
22-24	468.0	10.2				369				124				195			688	10.6
25-29	806.6	17.5	27.7	444	720	28.4	198	338	30.0	492	619	22.1	1134	1677	26.0
30-34	1302.0	28.3		717	504	383	19.9	15.1	319	340	239	30.1	21.2	794	929	575	33.1	20.5	1830	1197	18.5
35-39						121		4.8			101		8.9			354		12.6		576	8.9
40-44	1102.6	24.0		608	107	63	4.3	2.5	270	129	73	11.5	6.5	672	652	363	23.3	13.0	1550	499	7.7
45-49						44		1.8			56		5.0			289		10.3		389	6.0
over 50				(12)				(66)			(585)										
no answer				(41)				(69)			(374)										
operating totals				2533				1127			2803								6463	6463	
totals	4598.0	100.0		(2586)				(1262)			(3762)								(7610)		

TABLE I-7 SEX OF PARTICIPANTS IN BAVARIAN EDUCATIONAL INSTITUTIONS in per cent

SEX	"TRADITIONAL" ESTABLISHMENTS			TELEKOLLEG							
	CONTINUING VOCATIONAL SCHOOL	EVENING HIGH SCHOOL	EVENING SCIENCE HIGH SCHOOL	COURSE I		COURSE II			COURSE III		
				All participants	Examinees	Group A	Group B	Group C	Group A	Group B	Group C
MEN	78.02	80.09	82.57	78.85	82.57	78.83	60.86	54.08	82.5	65.2	59.0
WOMEN	21.98	19.91	17.43	21.15	17.43	20.85	37.89	43.29	17.4	33.0	39.3
(no answer as per application forms)						0.33	1.25	2.63	0.1	1.8	1.7

with other, similar traditional educational offerings.

c) Places of Residence of TELEKOLLEG Students

i) The TELEKOLLEG researchers hypothesized that TELEKOLLEG would provide opportunities for people in rural areas, and that concentrations of participants would occur in the rural catchment areas of larger industrial centres. Both these hypotheses proved false. Generally speaking, there has been a far greater response from the larger centres of population, and far less from the rural areas.

The extremely high over-representation of the largest cities such as Munich and Nuremberg diminished during the first three courses of TELEKOLLEG. At the same time, the participation of residents in centres of from 10,000 to 50,000 inhabitants has increased significantly. And, while rural under-representation was modified somewhat during the first three courses, population centres of 3,000 people and under remain significantly under-represented.

Several suggested causes for this situation have been presented. First, the vocational training character of TELEKOLLEG may not appeal to people in rural areas, which have fewer industries needing the skills which TELEKOLLEG helps to develop. Secondly, a certain amount of "lag-time" may be necessary in all cases to present opportunities to people outside the big cities. The rise in participation

by residents of centres with populations from 10,000 to 50,000 would support this suggestion.

A more detailed examination of the participant body suggested that the county of Upper Bavaria, around Munich, was heavily over-represented in comparison to the six other counties in the State of Bavaria. It has been suggested that a kind of local patriotism may be at work in this case, as residents of other counties react relatively unfavourably to offerings produced in and transmitted from Munich.

Table I-8 provides an indication of the areas in which the TELEKOLLEG participants lived.

ii) Commuting Time

Participants in Course I and Group A of Course II were asked to give the amount of time they required to go to work. In Course I, 73.8 per cent of the respondents required less than 30 minutes, while 26.2 required more than 30 minutes; in Group A of Course II, the percentages were these: under 30 minutes - 63 per cent; over 30 minutes - 37 per cent.

No clear conclusions can be drawn from this information, but there appeared to be more people participating in TELEKOLLEG with a long way to go to work than in the general population. The TELEKOLLEG researchers called for further studies correlating place of residence, commuting

TABLE I-8 SIZE OF PLACES OF RESIDENCE OF TELEKOLLEG PARTICIPANTS

Size of City, Town or Community	Total pop'n in this category in 000's	COURSE																		
		I (from Jan.'67)			II (from Sept. '67)									III (from Jan. '69)						
		All Groups			Group A			Group B			Group C			Group A			Group B			Group C		
		Expected	Actual	% diff. *	Expected	Actual	% diff.	Expected	Actual	% diff.	Expected	Actual	% diff.	Expected	Actual	% diff.	Expected	Actual	% diff.	Expected	Actual	% diff.
MUNICH 100,000 to 1,000,000	2118	1467	1873	+27.8	612	743	+21.3	285	411	+44.2	871	1263	+48.0	500	496	-0.8	253	241	-3.2	686	839	+22.3
50,000 to 99,999	596	413	321	-23.7	172	171	-0.6	80	87	+8.7	245	242	-1.2	141	121	-14.2	66	60	-9.1	193	249	+26.9
20,000 to 49,999	581	402	459	+14.2	168	262	+56.0	78	121	+55.1	234	310	+32.5	137	250	+82.5	64	98	+53.1	188	279	+45.4
10,000 to 19,999	710	492	587	+19.3	205	282	+37.6	96	143	+49.0	292	381	+30.5	168	297	+76.8	78	155	+98.7	230	409	+77.8
5,000 to 9,999	1057	732	833	+13.8	305	301	-0.7	142	172	+21.1	435	524	+20.5	250	251	+0.4	116	168	+45.8	842	418	+22.2
3,000 to 4,999	691	479	532	+11.1	200	234	+17.0	94	116	+23.4	284	374	+13.2	163	185	+13.5	76	96	+26.3	224	252	+11.6
2,000 to 2,999	661	458	403	-12.0	191	139	-27.2	90	57	-36.6	272	192	-29.3	156	134	-14.1	73	57	-21.9	214	181	-15.4
1,000 to 1,999	1350	935	641	-31.4	390	293	-24.9	182	97	-46.7	555	375	-32.4	319	205	-35.9	149	104	-30.2	437	240	-45.1
500 to 999	1184	820	459	-44.0	342	189	-44.7	160	69	-56.9	487	244	-49.9	280	165	-41.1	130	59	-54.6	384	177	-53.9
to 499	1028	712	802	+12.6	297	268	-9.8	138	71	-48.6	423	198	-53.2	243	253	+4.1	113	60	-46.9	333	187	-43.8

* $\frac{\text{actual-expected}}{\text{expected}} = \xi$

time, and the professional goals of participants, so as to determine the best times for transmission of television programs, particularly in cases where commuting might interfere with opportunities to view programs.

d) Previous Schooling and Job-Qualification of Participants

Tables I-9 and I-10 indicate the school and vocational qualifications of participants in TELEKOLLEG.

Generally, people in Group A of the courses have had a lower level of schooling than those in the other groups. This is illustrated by the increasing numbers of people with Middle Level or Senior Matriculation through groups B and C. In this connection, however, it should be noted that a good number of the participants in A groups (approximately 18 per cent) have more than public school qualifications.

The technical/vocational training of participants appears to indicate that, as well as providing opportunities for unskilled workers, TELEKOLLEG provides the first step to promotion for a good number of already skilled workers.

e) Occupations of Participants

The TELEKOLLEG researchers hypothesized originally that participants would work primarily in agriculture, have jobs as some kind of craftsman or worker, or be semi- or unskilled workers. Tables I-11 and I-12 indicate that these hypotheses were not proven.

Table I-9 SCHOOL BACKGROUND OF TELEKOLLEG PARTICIPANTS

School Completed	COURSE I All Groups #	I All Groups %	II Group A #	II Group A %	II Group B #	II Group B %	II Group C #	II Group C %	III Group A #	III Group A %	III Group B #	III Group B %	III Group C #	III Group C %
Public School	5180	74.3	2397	73.8	770	54.7	2279	52.3	1254	48.5	406	32.2	958	25.5
Business/ Trade School Without ↓									1164	45.0	505	40.0	1254	33.3
Middle Level	1796	25.7	852	26.2	637	45.3	2076	47.7	115	4.5	246	19.5	812	21.6
Senior Matriculation (Abitur)									11	0.4	56	4.4	475	12.6
No answer									42	1.6	49	3.9	263	7.0

Table I-10 SKILL TRAINING OF TK PARTICIPANTS

Skill "Examinations"	COURSE III Group A #	Group A %	Group B #	Group B %	Group C #	Group C %
Skilled worker (journeyman) exams	1400	54.1	527	41.8	1163	30.9
Master's Exam	256	9.9	157	12.4	427	11.4
Neither of the above or no answer	930	36.0	578	45.8	2172	57.7

TABLE I-11

OCCUPATIONS OF TELEKOLLEG PARTICIPANTS				
	COURSE			
	I	II		
representation	all groups	Group A	Group B	Group C
over-represented	iron-workers, tool & die makers, mechanics and related occupations electricians photographic and printing workers engineering trades & technicians technical specialists police & employees of security agencies	iron-workers tool & die makers mechanics, etc. engineering trades & technicians police & employees of security agencies	engineering trades & technicians workers (white-collar) in agencies, administrations, and offices	engineering trades & technicians office, etc., workers social workers teaching and other educational professions
under-represented	agricultural, forestry & fishery workers people with cleaning & washing jobs	agricultural, animal husbandry and market garden workers co-working family members in agriculture & forestry	co-working family members in agriculture & forestry	agricultural, animal husbandry and market garden workers co-working family members in agriculture & forestry

TABLE I-12

JOB-GROUPINGS OF TELEKOLLEG PARTICIPANTS							
JOB-GROUP	Percentage of Bavarian population	COURSE III					
		GROUP A		GROUP B		GROUP C	
		#	%	#	%	#	%
Apprentice		383	14.8	55	4.4	130	3.5
Agricultural Worker	46.3	204	7.9	63	5.0	111	3.0
Unskilled Worker		651	25.2	264	20.9	494	13.1
Salaried Worker	20.1	778	30.1	513	40.6	1061	28.2
Government Worker	7.6	275	10.6	100	7.9	426	11.3
Self-employed/ Freelance Worker	14.6	101	3.9	55	4.4	295	7.8
No Answer		194	7.5	212	16.8	1245	33.1

TABLE I-13

ARMY (Bundeswehr) SERVICE							
"Are you a member of the Bundes-Wehr"	II COURSE all groups	III					
		GROUP A		GROUP B		GROUP C	
		#	%	#	%	#	%
Yes	↑ 8.5	321	12.4	47	3.7	71	1.9
No		2072	80.1	1040	82.4	3034	80.6
No Answer	↓	193	7.5	175	13.9	657	17.5

The nature of TELEKOLLEG offerings, the educational pre-requisites of certain occupations and vocations,and personal identification of educational goals appear to limit participation in TELEKOLLEG to a relatively narrow range of people.

In the first place, much of the TELEKOLLEG program was suited to particular occupations, as is illustrated by the large number of skilled craftsmen, particularly in the A groups. For people in other occupations, who require the same or higher standards than skilled workers, but for whom TELEKOLLEG was not particularly suited, the most appealing form of participation was in the B and C groups. The relatively low involvement of people in agricultural occupations is probably more the result of the inappropriate nature of the TELEKOLLEG offerings than of any lack of interest in continuing education opportunities. This difficulty in turn suggests the difficulty of finding appropriate educational offerings for occupations which, in order to take advantage of extended opportunities, may have to undergo a radical change before the people involved in them can benefit occupationally from the increased educational opportunities.

The relatively high proportion of salaried and government workers (in Course III) suggests that these groups are more prepared to recognize and take advantage of chances for further education than are people in other job-groupings.

Finally, it should be noted that the TELEKOLLEG offerings were best suited for people in particular occupations, most of which are male-oriented. The heavy participation in group A of Course III by members of the army bears out this impression. (See Table I-13)

To engage women more effectively in TELEKOLLEG, one would expect that courses of particular value to occupations traditionally carried out by women and girls should be offered. Only then might the imbalance between men and women participants be changed so that a more nearly normal proportion of women could be reached.

f) Motivation and Goals of TELEKOLLEG Participants

By far the largest group of TELEKOLLEG participants, particularly in the A groups, had very clear objectives in taking advantage of TELEKOLLEG's offerings. For those in the A groups, these objectives were almost

exclusively vocation-oriented; the participants saw in TELEKOLLEG an opportunity to improve their work qualifications, thereby gaining economic and eventually social benefits. In the B and C groups, most participants saw TELEKOLLEG as an opportunity to extend their general knowledge.

Another interesting factor came to light in the examination of application forms for Course III. In general, it was found that the educational qualifications of the spouses of married TELEKOLLEG participants were higher than those of the participants themselves. This may have been an important factor for two reasons. First, within the family itself, there would have been motivation for the lesser qualified partner to improve his educational standing vis-a-vis his wife. (Since most of the participants in Group A of Course III were men, it can be assumed that non-participating wives were better qualified than their husbands.) Secondly, the impetus to increased upward social mobility would be strengthened by the presence of an already better qualified spouse.

Another factor which influenced TELEKOLLEG participation in some cases was whether or not an individual was from East Germany. For all groups of Course III, there were about one-third more participants who had left the German

Democratic Republic than was to be expected on the basis of this group's proportion of the general population.

g) General Observations

From the work of the TELEKOLLEG researchers, a picture of an "average" participant in TELEKOLLEG emerges. He would be either an apprentice from 15 to 19 years of age or a skilled worker from 25 to 29. He would live in a large population centre, and be engaged in a craft or trade generally carried out by men. If he were married, his wife would be slightly better educated than he, and he would likely have only one child, if any. His earlier education was little more than elementary school, but he would have completed at least part of his formal trades training. Other factors could be added, but even without them there develops the outline of a relatively limited group within the general population, the fulfilment of whose needs and goals makes it unlikely that broad general educational objectives can be met.

TELEKOLLEG was unsuccessful in reaching two particular groups in society - women, and people in agriculture and forestry. If the concept of equal opportunity were to be emphasized, then the choice of the vocational continuation school as the model for TELEKOLLEG's content was less than fortunate, as the use of television would only serve to intensify the gap between traditional educational

offerings and those groups within Bavarian society for whom traditional schooling was not designed.

However, this fault should be considered within a wider educational context. TELEKOLLEG proved that television could be used to serve a hitherto disadvantaged group, even though the concept of education and the aims of this group were very traditional in nature. There appears, therefore, to be a need to combine the obvious power of television in reaching particular educational "publics" with more broadly based and well-conceived educational aims, which are to be seen within the context of equality of educational opportunity for all individuals and groups within society.

E. Evaluation Techniques and Learner Performance to Date

The Bavarian Ministry of Education is responsible for the conduct of examinations of TELEKOLLEG participants. It provided a series of examinations modelled on those designed for students in the traditional educational stream.

1. Courses I and II

Held in November, 1969, according to a single time-table in 59 Bavarian vocational continuation schools, and supervised by the directors of these schools, the following written examinations were required for Courses I and II:

German	240 minutes
English	120 minutes
Mathematics	120 minutes
Physics	120 minutes
Chemistry, including technical chemistry	one of two different examinations, depending on the participants: each of 90 minutes
Technical drawing	150 minutes
Biology	(as for Chemistry) 120 minutes

In addition, oral examinations were held in history (including social studies) and for those students whose marks in another subject fell between two categories. Consideration was also given to the marks obtained by students in the last set of pre-examination tests.

For the final examinations of Courses I and II, 2,983 candidates presented themselves. This represents 27 per cent of the total who began these courses (8,527 from Course I; 2,517 from Group A of Course II), but a further observation is necessary. No distinction was made in Course I among participants in Groups A, B, or C. On the basis of total enrolment in Course I and extrapolation from later experience in Courses II and III (See Tables I-5 and I-6), it may be assumed that approximately 34 per cent of the

14,455 enrolees in Course I, or 4,915 participants, would have been interested in the involvement offered by an A group opportunity. A more realistic total of enrolees for the A groups of Courses I and II, therefore, is 7,432 (4,915 plus 2,517). On this basis, the 2,983 examination candidates constitute approximately 40 per cent of the original enrolees. This compares very favourably with the retention rate in traditional forms of schooling.

Of the 2,983 candidates, 2,878 or 96.5 per cent passed the examinations. In 1968, by comparison, 90 Bavarian vocational continuation schools graduated 1,951 students in the same course. However, since the TELEKOLLEG offering has been based on a two-year cycle, comparison of the numbers of TELEKOLLEG and traditional school graduates may be misleading.

Marking was based on the German system, which is as follows:

1 - very good

2 - good

3 - satisfactory

4 - adequate (4 - is usually a failing mark)

5 - weak

In general, the marks achieved by TELEKOLLEG students were slightly higher than those of students in regular schooling situations. The average marks for individual subjects, based on the 1-to-5 marking system, are as follows:

German	2.83
history, with social studies	2.38
English	3.23
mathematics	3.14
physics	2.69
chemistry	2.85
biology	2.37
domestic economics	2.43
economic geography	2.56
technical drawing	2.49
business arithmetic	2.22

2. Course III

On May 22, 1971, 747 participants in Course III of TELEKOLLEG received the vocational school certificate. One possible explanation of the lower number of graduates for Course III may be that Courses I and II provided opportunities which took care of a backlog of needs, whereas Course III served recurrent needs, as do regular established school classes.

F. Costs

Within TELEKOLLEG, reference should be made to three kinds of costs: those borne by the Bavarian Ministry of Education, individual students, and the Bavarian Broadcasting Corporation.

1) Ministry of Education Costs

For Courses I and II of TELEKOLLEG I, the Ministry of Education bore costs of DM 2,344,000 in 1967 and 1968, and DM 1,400,000 in 1969, for a total of DM 3,744,000. (DM 1, - equals Canadian $0.30).

For each of the 2,878 successful candidates of Courses I and II, therefore, the costs were DM 434, -. Costs per student at other levels of education are public school, DM 1,070; secondary school, DM 2,240; and Matriculation, DM 2,270. The savings to the public purse as administered by the Ministry of Education are obvious.

2) Costs Borne by Individuals

Changes in the methods of payment by individuals have occurred since the beginning of TELEKOLLEG. The following examples are taken from Course III, which began in January, 1969, and Course IV, which began in January, 1971.

a) For Group A Students (all compulsory subjects)

1. In Course III, fees were DM 16,50 per trimester or DM 99, - for the full course. This amount includes all required printed material.

2. In Course IV, fees have been increased to DM 24, - per trimester, or DM 144, - for the entire two-and-a-half-year course. This amount includes most of the printed material (34 books), so that Group A students are required to pay about one-half the cost. Special additional charges are now levied for books in some optional subjects - business arithmetic, DM 6, -; technical chemistry, DM 5, -; technical drawing I, DM 18,-; and technical drawing II, DM 18, -. These prices are lower than those for students in groups B or C. (See below.)

b) For Group B and Group C Students

1. In Course III, participants in Groups B and C were required to pay DM 7, - per trimester for each subject which they studied. This sum included the cost of the book for the subject.

2. In Course IV, no charges are levied on students in groups B and C. However, no printed material is sent out by TELEKOLLEG. Instead, participants may purchase books from the publishing house which works with TELEKOLLEG, or from a book store. Table I-14 indicates the cost of the text-books.

3) Bavarian Broadcasting Corporation Costs

Bavarian Broadcasting receives its money from licence fees, and financial support for TELEKOLLEG is

Table I-14: Text-Book Prices for Students of B and C Groups (Retail)

Subject	No.of Books	Price per Book	Price per Set
German	6	DM 7,-	DM 39,-
English	6	8,-	45,-
History	4	8,-	30,-
Mathematics	6	10,-	55,-
Technical drawing	2	21,-	39,-
Practical mathematics	2	8,-	15,-
Biology	1	8,-	---
Chemistry	1	10,-	---
Technical chemistry	1	7,-	---
Electrotechnology	1	10,-	---
Bavarian history	1	7,-	---
Social studies	1	7,-	---
Economic geography	1	10,-	---
Domestic economics	1	10,-	---
Business arithmetic	1	8,-	---

Other support material is available, as follows:

i) Supplementary books: mathematics DM 8,-

: physics (formulas) 8,-

ii) Programmed learning book for bookkeeping 18,-

iii) Longplaying records for English practice (12) 19,-

iv) Audio-cassettes for English practice (4) 64,-

drawn from this source. (See Appendix 1 for an explanation of financing.)

It is very difficult to determine the cost per student of TELEKOLLEG I and at the same time present a realistic picture. Therefore, the following presents some cost figures and raises some of the questions associated with an effort to determine per-student cost.

a. Initial Costs

The cost of each of the 487 presentations of TELEKOLLEG I was rounded off to DM 6,000 - an approximate total of DM 3,000,000 direct costs. Indirect costs, usually reckoned at 200 per cent of direct costs, but increased in this case, brought the total costs of TELEKOLLEG I to DM 12,500,000.

(See Appendix 2 for cost estimates for TELEKOLLEG II.)

This amounts to a cost per candidate in the A groups of Courses I and II of DM 4,343, -, which, combined with the costs borne by the Ministry of Education, totals DM 4,777,--, well over double the costs of a matriculation student.

b. Modifying Factors

i) The figure of DM 4,343 is misleading. Assuming at least as many successful participants in the A groups of Courses III and IV, the cost per student for all courses is reduced significantly, to perhaps 60 per cent of DM 4,343

(allowing for continuing non-television administrative costs) or approximately DM 2,600 per student.

ii) Moreover, revenue from sales should be subtracted from this total. TELEKOLLEG I has been purchased in its entirety by the German states of Baden-Württemberg, Rhineland-Palatinate, and the Saarland. All the basic subjects and supporting materials have been acquired by the Swiss broadcasting organization. In addition, the English courses were purchased by the states of Hessen and Northrhine-Westphalia. These revenues should reduce the original cost per student by at least DM 600, leaving a figure (probably on the high side) of approximately DM 2,000.

iii) In the above approximations, all costs have been assessed against successful students participating in the A groups. Leaving aside the question raised by the fact that most educational institutions reckon costs on the basis of all students, and not just on successful ones, the assessment of costs against the A groups means either that the television costs for students of B and C groups of all four courses of TELEKOLLEG I must be reckoned at zero, or that the cost per successful student in the A groups must be reduced still further.

iv) It should be kept in mind that indirect costs in any television organization cover a multitude of factors, from the president's salary to window-washing. Attribution of

indirect costs to a project such as TELEKOLLEG always runs the risk of erring on the high side.

c) Other Considerations

The use of open-broadcast television raises further questions about costs and cost-attribution. Unlike a closed educational institution, TELEKOLLEG (like the Open University in Britain) provides material for a very wide range of people. In the TELEKOLLEG experience, reference could be made to the extension of general information: for some physics and history programs, more than 200,000 receivers were tuned to the program; to the introduction of new ideas in education, such as the study of affine geometry in TELEKOLLEG; and the education of parents, who may be able to learn about new trends in schools through the viewing of such programs. It is difficult to determine the cost-benefits of such situations.

d) Summary

The cost per student of TELEKOLLEG is at least as low, if not significantly lower, than that for a student following a traditional educational path. This assessment, moreover, omits any consideration of the fact that TELEKOLLEG students averaged higher marks.

Chapter II: The Open University

Britain's Open University is both the realization of an ideal and a practical exercise in educational development. On the one hand, in the Greek spirit of ἐλευθερία, the ideal soars above the limitations of mundane educational enterprise; on the other hand, practical considerations sometimes create situations which fail to achieve the high ideal of the University's advocates. It would be unfair, therefore, for those who study the Open University and its operations to condemn its efforts if they fail to reach its ideals, or conversely to forget the ideals and become submerged totally in its operational aspects. If judgements are to be made about the success of the Open University (and it could be argued, quite reasonably, that such efforts are totally premature inasmuch as courses began only in January, 1971), then such judgements should be confined to the success which the Open University has achieved to date in striking effective compromises between its ideals and the practical limitations which it faces.

Perhaps this can be illustrated best in the University's name. "Open University" is a rather grand name for what could be described fairly as a correspondence "university" for part-time adult students. Much has been made of the openness of the institution, particularly in inaugural speeches, but practical considerations have inevitably limited the degree of openness which the University has been able to achieve. For reasonable people, therefore, the question is not whether the University is open, but how open it will be.

A. Historical Development

To provide a framework for an examination of the development of the Open University, four events can be taken as reference points. These include:

1) former Prime Minister Harold Wilson's statements on increased educational opportunities, in 1963 and 1964;

2) Cmnd. 2922, a White Paper presented to the British Parliament in February 1966, entitled "A University of the Air";

3) the Report of the Planning Committee on the Open University, submitted on the last day of 1968; and

4) the start of instruction, in January of 1971.

1) In a speech in Glasgow in September of 1963, Harold Wilson, then Leader of the Opposition, proposed "a new program providing facilities for home study to university and higher technical standards on the basis of a University of the Air and nationally organized correspondence college courses."[1] Mr. Wilson's speech was included in an essay which he prepared for the Encyclopaedia Britannica Book of the Year 1964,[2] and it is interesting to note the context within which he envisaged a future "University of the Air." In Chapter IV, "Labour and the Scientific Revolution," under the sub-heading "More Scientists," Mr. Wilson presented his view of the British educational system, criticizing

in particular the 11-plus examinations and the severe limitations placed upon university entrance and higher education in general.[3] It was within his proposal for post-secondary educational expansion that reference to a University of the Air was made.

> ...We are committed to a crash program of university expansion, involving immediately the more intensive use of existing buildings and facilities, the building of far more universities and colleges, and the ending of the system of snobbery which denies to our colleges of advanced technology the right to award degrees. Our aim is to provide facilities for higher education for at least 10% and ultimately 20% of our young people instead of the 5% at which the Conservative government is, at best, aiming. And in so doing we insist on the need to maintain adequate facilities for research, for in our conception the role of a university is not solely--or even mainly--that of teaching.
>
> Within the program of expanded facilities for higher education we shall provide the greater part of the scientists, engineers, technologists, the new Britain will need. But our plans are not limited to in-college education.
>
> As a supplement to--not a substitute for--the expansion of institutional higher education, we are

proposing a new program providing facilities for home study at university and higher technical standards, on the basis of a University of the Air and of nationally organized correspondence college courses.

These will be intended to cater to a wide variety of potential students. There are technicians and technologists who perhaps left school at 16 or 17 and who, after two or three years in industry, feel that they could qualify as graduate scientists or technologists. There are many others, perhaps in clerical occupations, who would like to acquire new skills and new qualifications. There are many at all levels in industry who would desire to become qualified in their own or other fields; or housewives who might like to secure qualifications in English literature or geography or history. There is the whole wide extramural area at present covered by the Workers' Educational Association, and local authority evening classes, whose work could be thus vastly enriched.

What we envisage is the creation of a new educational trust, representative of the universities and other educational organizations, associations of teachers, the broadcasting authorities, publishers, public and private bodies, producers capable of creating television and other

educational material. This trust would be given state financial help and all the government assistance required. Broadcasting time could be found either by the allocation of a special TV channel, together with appropriate radio facilities, or by pre-empting time from the existing three channels and the fourth, when allocated.

Educational programs would be backed by the provision of textbooks and other material related to the courses, and facilities would be provided for supplemental study at educational institutions such as technical colleges. Arrangements would be made for papers to be marked, probably under the aegis of individual universities, technical colleges or professional institutes. Correspondence courses not themselves based on TV or radio programs would also be available.

The trust would be asked to make arrangements with one or more established universities to provide examination facilities and to award external degrees and diplomas to students reaching a given standard in the examinations.

One-year diploma courses could be provided in many subjects; e.g. foreign languages. Industrialists would be pressed to pay a bonus on salary to sales and other staffs qualifying for the diploma. There would, too, be many who, for non-vocational reasons, would

> welcome such facilities--families intending to holiday abroad the following summer might wish to take a winter course in a foreign language. But, of course, existing TV experience shows that there are hundreds of thousands, including many older members of the community, who, with no thought of degree or diploma, would wish to enrich themselves by participation in the educational programs.[4]

It is clear from Mr. Wilson's statements that the impetus for the University of the Air idea was as much political and social as purely educational.

It might be noted that this advocacy for a University of the Air was to have both positive and negative effects. Mr. Wilson's stand encouraged supporters of extended post-secondary opportunity (the National Extension College is one example), but his position as a politician brought the whole question into the political arena. Since the Labour Party's defeat in mid-1970, the future of the Open University under a Conservative government has been far less certain than in the years from 1964 to 1969.

When Harold Wilson became Prime Minister in 1964, he placed responsibility for the University of the Air proposal in the hands of Miss Jennie Lee, Parliamentary Under-Secretary of State, Department of Education and Science. Under the Chairmanship of Miss Lee, an Advisory Committee on the University of the Air prepared a report which became Command Paper 2922.

2) Command 2922[5] called for an intensive exploitation of television and radio, requiring for television "at least two hours at peak viewing time on five evenings a week, with repeats during the day, early morning, late evening, and at weekends,"[6] with more presentations as required by particular courses. And while integration with correspondence courses, tutorial services and residential study opportunities was proposed, the major emphasis was placed upon television and radio. As it turned out, the proposed two hours per evening represented four times as many TV presentations as were actually transmitted during the first course in 1971.

The presentation of Command 2922 and the discussion which it engendered led to the appointment of a Planning Committee on the Open University in September 1967, with these terms of reference: "To work out a comprehensive plan for an Open University, as outlined in the White Paper of February 1966, 'A University of the Air,' and to prepare a draft Charter and Statutes."[7] The Planning Committee's Report was presented by its Chairman, Sir Peter Venables, on 31 December 1968, and it was this report that provided the basis for the actual operations of the Open University.

3) The Report of the Planning Committee proposed an institution which differed greatly from Mr. Wilson's original proposal and the spirit of Cmnd. 2922. It called for an Open University which "will be, as are all other universities,

an independent, autonomous institution,...[whose objectives]...are to provide opportunities, at both undergraduate and post-graduate level, of higher education to all those, who for any reason, have been or are being precluded from achieving their aims through an existing institution of higher learning."[8] The Report added that "this does not imply competition with existing institutions, but rather an attempt on a national scale to complement their efforts; an attempt which may well increase the demands upon existing institutions, as students, stimulated by the experience of part-time study, increasingly come to want the opportunity for full-time study."[9]

From Harold Wilson's proposal, through Cmnd. 2922, and on to the Report of the Planning Committee, an important shift of emphasis, at least in practical matters, took place. Mr. Wilson had called for an educational trust which would supplement the activities of existing universities; the first objective, as described in Cmnd. 2922, was "to contribute to the improvement of educational, cultural and professional standards generally, by making available to all who care to look and listen, scholarship of a high order,"[10] with full participation considered as the interest of a "minority." The Planning Committee proposed a much more traditional institution, complementing the work of other universities, but acting effectively, as part of the broad university community. At the same time, emphasis on television and

radio decreased, while more attention was paid to what was to become the central medium, print (in correspondence work).

It was perhaps inevitable that such a "regression to the norm"[11] would take place. The Vice-Chancellor of the University, Dr. Walter Perry, pointed out that when Mr. Wilson proposed the University of the Air, "in academic circles this was generally held to imply that one could offer higher education to adult citizens by teaching them through television and radio, a concept which was received with outright ridicule and derision in university circles."[12] It was important, therefore, for the Open University first to achieve acceptability and credibility within the broad university community, and then, in Dr. Perry's words, to "win its spurs as a University."

Every effort was made to make the Open University acceptable and credible. More than 40 universities, including Oxford, were asked whether they wished to undertake the project, and only after each declined was the decision taken to create a new institution.

Seven of the 13 members of the Advisory Committee which drafted Cmnd. 2922 could be described as "pure academics" (while nearly every member was closely associated with a university); the Open University Planning Committee was drawn overwhelmingly from university ranks; and in the present Council and Academic Advisory Committee of the Open University, a large number of Vice-Chancellors of other universities and

other ranking academics are included. Moreover, the Selection Committees which were responsible for appointing staff to the faculty of the Open University (there were about 40 applicants for each position) were also drawn from other universities, which not only kept the academic community informed of the potential of the Open University faculty, but also began the creation of a community of interest in the success of the Open University.

As it has developed, therefore, the Open University has concerned itself more and more with its nature as a university, and less with a major exploitation of television and radio; it might be argued that it is involved in the development of a 'rounder wheel.' Given the nature of educational establishments, which usually win any arguments, this was perhaps inevitable. But, as Dr. Perry points out, the Open University may be most significant in the development of the concept of continuing education. In his words, "the fullest potential of the Open University is realisable [in this field]. I think that in the last analysis it would never really have mattered if we had never produced a graduate or offered an undergraduate program. What would really matter would be if we had helped in this continuing education."[13]

B. Organization and Structure of the Open University

Three approaches can be adopted in a description of the nature of the Open University. These include examinations of

1) the formal structure of the University's organs;

2) the organization of the University's central operations; including a short description of the instructional system; and

3) the organization of opportunities for Open University students.

1) The Organs of the University

a.) The governing body of the Open University is the Council. Its responsibilities include "advancing the interests of the University, maintaining its efficiency, encouraging teaching, the pursuit of learning and the prosecution of research therein."[14]

b.) The senior academic body of the Open University is the Senate, which is composed of 75 members of 11 groups.[15] It is responsible for matters connected with teaching, research, examinations, and degrees.

c.) The interim Academic Advisory Committee, appointed by the Privy Council, also has responsibility during the initial years of the University's operations for academic matters.[16]

d.) Provision has been made for the establishment of a General Assembly for the University. Each of the Regional Assemblies (one for each of the 12 regions), of which every student and part-time staffer is a member, elects five part-time staff and three students to the General Assembly, and nominates from this group of eight one staff member and one student for election to the Council (where

four places have been reserved for such elected members), and one staff member for election to the Senate. Representatives of the Senate are also members of the General Assembly. The General Assembly, in addition to electing representatives to the Council and Senate, may express opinions on academic matters to the Senate. Ballots for the election of regional representatives were sent to students on July 26, 1971.

e.) Mention should be made of the many committees which work within the university.[17] The role of some of these committees may be found in Chart II-1, which indicates the organization of the decision-making process within the Open University.[18]

2) The Organization of the University's Central Operations

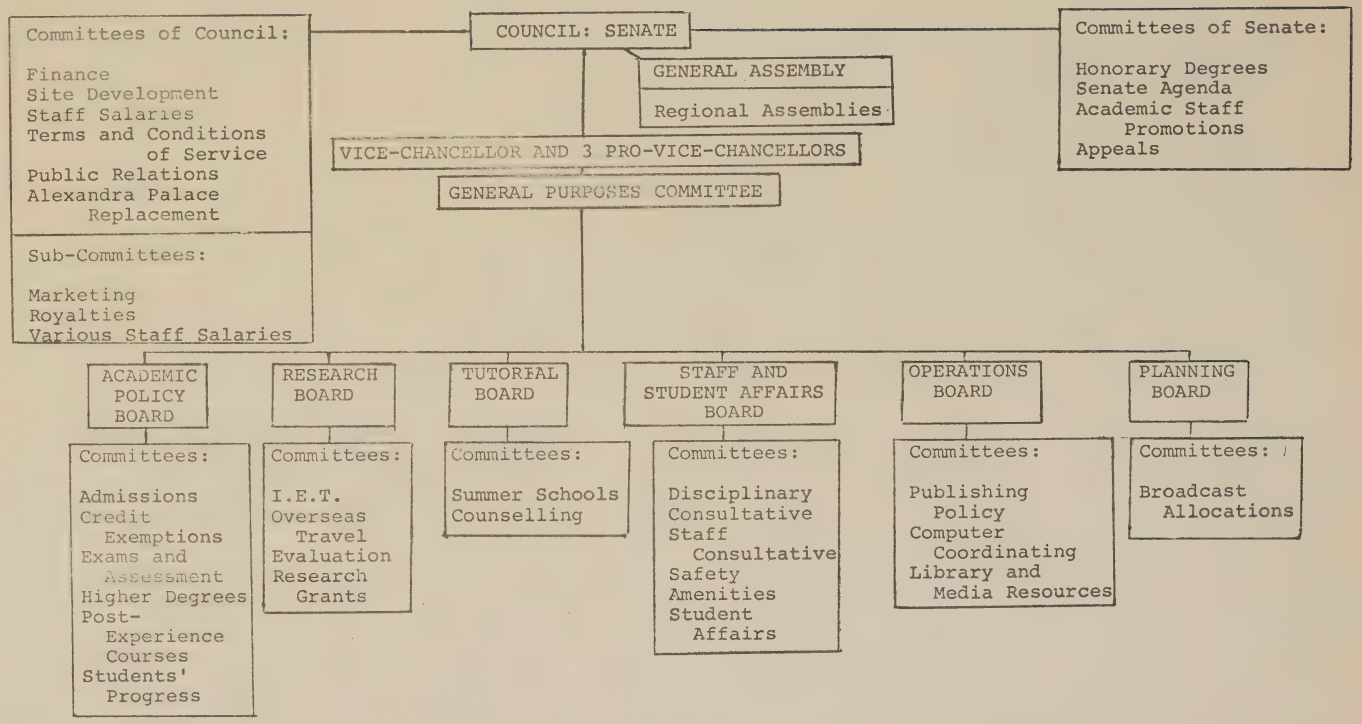
Chart II-2 provides an outline of the central operations of the Open University.[19]

Several points should be noted:

1) The deans and academic staff are members of six faculties--Arts, Educational Studies, Mathematics, Science, Social Sciences and Technology.

2) Three divisions of the University's organization should receive emphasis, for, along with the Institute of Educational Technology, they are not found in every university.

Chart II-1: THE OPEN UNIVERSITY: DECISION-MAKING PROCESSES



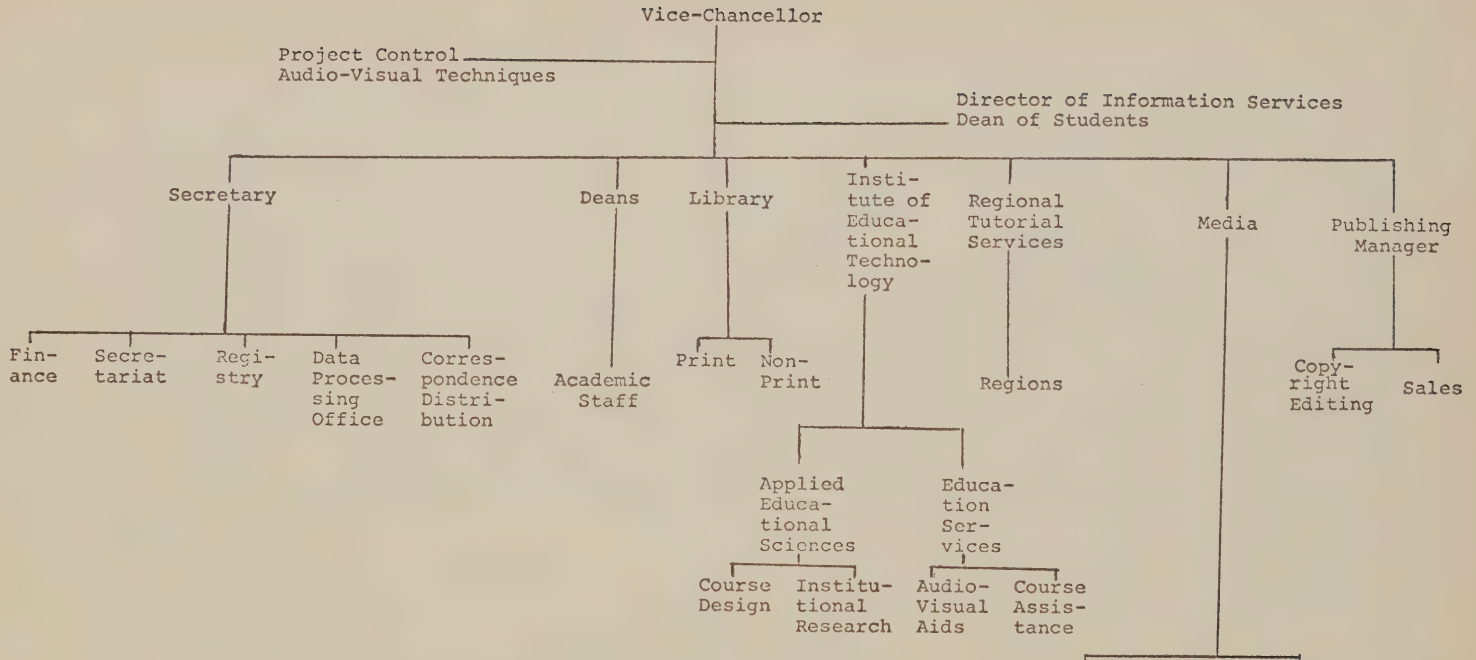


Chart II-2

THE OPEN UNIVERSITY:

ADMINISTRATIVE ORGANISATION

a) Correspondence Services, which have to meet the needs of well over 20,000 students, have installed Europe's largest mailing machine and opened a section of the local Post Office to handle the huge volumes of mail.

b) The Publication Service has been formed to market the Open University's materials, both as complete courses and as elements of these courses.[20]

c) Since so much of the Open University's offering is in the nature of a "remote study"--i.e., one unmediated by personal contact with a teacher--the preparation--development and production--of material for the printed elements of Open University is of the greatest importance. This is the responsibility of the Media Production Department.

3) A unique part of the Open University organization is the Institute of Educational Technology. (See Appendix 3.) Its responsibilities extend far beyond those usually associated with a department of audio-visual aids, or of providing teaching advice for academics. It occupies an important position in the University's instructional system, providing a) services in course development, including close co-operation with academics and media specialists in the analysis and organization of subject material; evaluation and pre-testing of course material; and the preparation of tests for students; b) a Study Guide for Open University

students; c) more extensive studies of Open University students and their needs; and d) in the future, a major evaluative research program, should funds become available for this purpose. This program will include studies based on diagnostic analyses, on longitudinal surveys of students before and after graduation, and on the development of learning styles.[21]

Professor Brian Lewis, Deputy Director, described the Open University's general approach to course development and the Institute of Educational Technology's role within it.

> ...course production is essentially a team effort. A dozen or so academics (sometimes more, sometimes less) assemble themselves into a team under the direction of a Course Team Chairman, to determine the aims and objectives and content of the course they wish to produce. After deciding what needs to be done, and who is going to do it, the team splits up into small working groups of 2-3 persons. Within each Working group, one person usually has chief responsibility for doing the necessary writing (of the correspondence material, the radio script, the television script, or whatever), and the remaining persons have merely an advisory or watching role. From time to time, the Course Team meets in full session to consider the progress of the Working Groups, and to suggest alterations and refinements that might help to give the course more unity and direction. At all stages of the

> operation, at least two BBC producers (one for radio, and the other for television) are in regular attendance. At least one member of the Institute of Educational Technology (IET) is also available. In addition, there are several other kinds of adviser (media designers, publishing officers, copyright experts, etc.) on call. And the Course Team may also appoint several specialist consultants and assessors. Wherever possible, the various products of the Course Team members are tried out on volunteer students. This is known as <u>developmental testing</u> [author's italics], and its aim is to reveal defects that stand in need of correction. Eventually, the course materials are brought (usually by pressure of deadlines) to their 'final' form, and are handed over for printing and despatch.[22]

The course-team approach, as developing within the Open University, is relatively new in university teaching, and might be applied both in multi-media systems and in more traditional situations. Nevertheless, it emphasizes a teaching function rather than a learning activity, however much the participants may learn from working in this manner. As such, it is much more closely related to traditional university practices than to the radical exploitation of newer media for higher education.[23, 24]

3) The Organization of Student Learning Opportunities

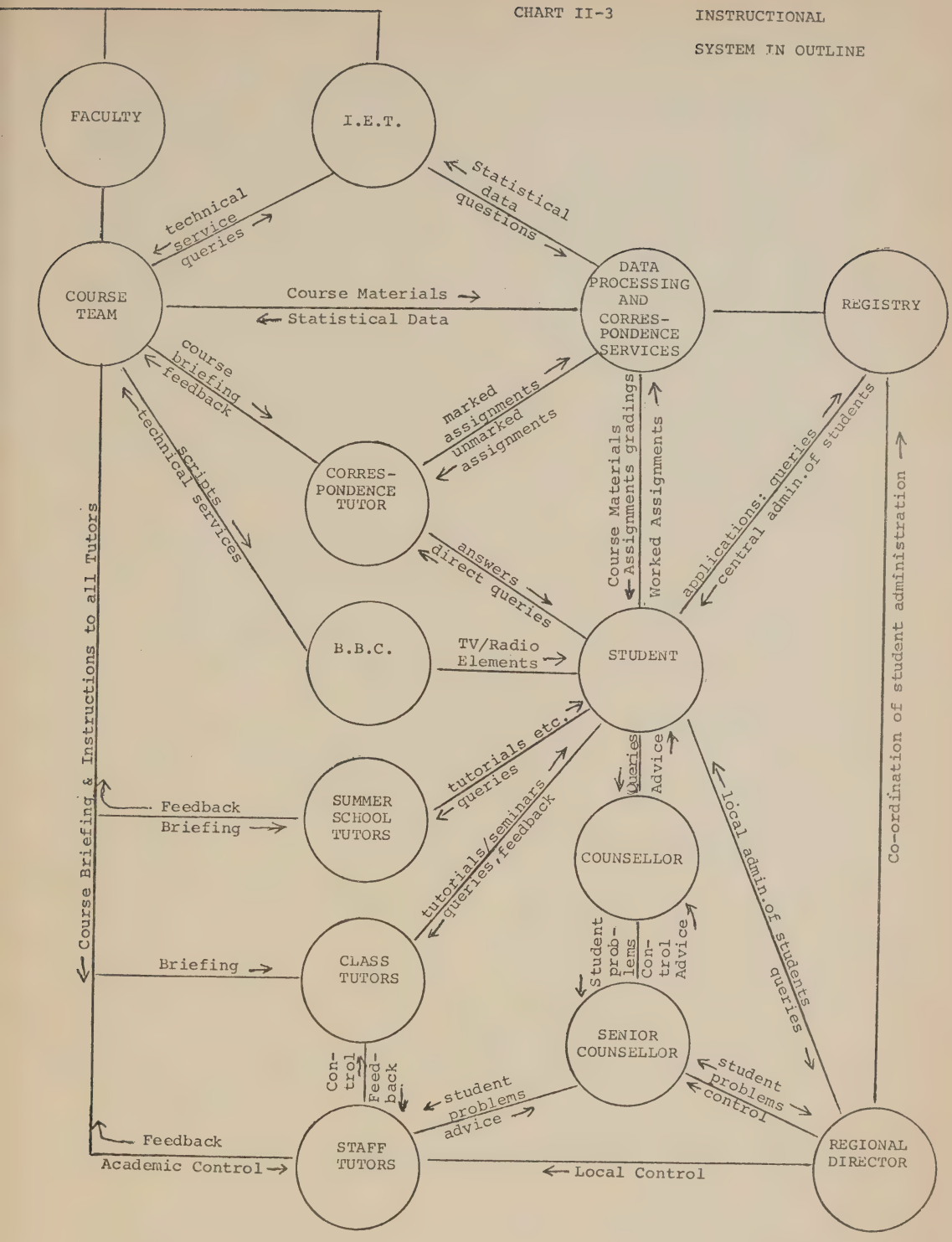
With a student body of more than 20,000, none of whom are "on-campus," the organization of learning opportunities departs from those offered by existing universities. Moreover, to keep the University as open as possible, the planners and faculty try to make provision for meaningful interaction between students in the University's 12 regions and the faculty at the operational centre in Milton Keynes, Buckinghamshire.

Chart II-3 provides a model of the interplay among individuals and facilities within the University.

The Open University's offerings, essentially correspondence courses, are supported by a wide range of other activities. These include a) the television and radio presentations, i.e., the regular weekly broadcasts, approximately one-half hour in length, of one program per course (with repeats), as well as the Open Forum broadcasts; b) residential summer schools, held in university space free during the regular vacation periods, and c) the opportunities provided in the chain of study centres.

To ask, "Where is the Open University?" is not frivolous. In addition to the University's centre in Milton Keynes, there are well over 200 Study Centres throughout Great Britain and Northern Ireland, without which the Open University as it is now conceived could not operate.

CHART II-3 INSTRUCTIONAL SYSTEM IN OUTLINE



These Study Centres are organized within the 12 Regions, with from eight (Northern Ireland) to 34 (London) Centres in each. Each Regional Centre administering the Study Centres has a full-time staff, usually including a regional director, an assistant regional director, two or three senior counsellors and an administrative assistant.

The Open University uses a variety of facilities to provide the physical setting for the Study Centres, which provide the opportunities for students to meet with tutors and counsellors.

There are five groups of individuals who are directly or indirectly responsible for the 'teaching' functions within the Open University. Those in closest contact with the students include (i) the counsellors, (ii) the correspondence tutors, and (iii) the class tutors. Those with supervisory and co-ordinating responsibilities include (iv) the senior counsellors and (v) the staff or senior tutors. The first three groups are part-time staff; the last two full-time. Some of their responsibilities are as follows:

(i) The counsellors:

Since the Open University's success will depend to a large extent on the success of its students, and since the study situation is for most students a relatively new experience, the job of the counsellors is most important.

Each counsellor is assigned about 20 students, and it is his responsibility to provide these students with help, encouragement and guidance. Close contact, therefore, between counsellors, and class and correspondence tutors is most important, in order that during the counselling sessions, which are held at the Study Centres most week-day evenings, the students can discuss fruitfully with their counsellors the progress of their studies. When students complete the first year's program it is expected that counsellors will provide assistance in the selection of subsequent courses. Counsellors are not expected to provide tutoring services as such.

(ii) The correspondence tutors:

The major responsibility of the correspondence tutor is the assessment of the student's written work. For in addition to tests graded centrally through the university's computer facilities, a series of written assignments (from 9 to 14, depending on the course) will also be required. A correspondence tutor will receive, on average, the work of about 20 students to mark.

Close liaison is necessary between the correspondence tutor on the one hand, and course teams, class tutors and counsellors on the other, to provide course content feedback or particular information on individual student's difficulties.

The Open University correspondence tutors have been appointed on the basis of a good, relevant university degree, teaching experience, and, where possible, experience in correspondence education. They are responsible to the Central Correspondence Services Division.

(iii) The class tutors:

For the tutorial sessions held at the Study Centres, (about once every two weeks for arts and social sciences, about once every four weeks for mathematics and science), the class tutors are responsible for the main "teaching" job within the Open University, and to the senior or staff tutors. They are provided with the correspondence elements of the course, and are encouraged to follow the radio and television presentations.

In tutorial sessions of about 45 minutes each, with up to 20 students per session, the class tutor's role is not that of the traditional teacher/lecturer, but rather more that of a "manager of learning," who provides help to students in overcoming difficulties encountered in the non-personal elements of the course, and helps reinforce the learning which has already been achieved. One method is through group discussion, in which the class tutor's role varies with the nature of the student group. Class tutors are expected to maintain close contact with the

counsellors and correspondence tutors.

(iv) The senior counsellors:

Senior counsellors are members of the Regional Centre Staff, and their responsibilities are to co-ordinate the work of, and advise the counsellors in each of the Study Centres.

(v) The senior or staff tutors:

Senior tutors are full members of the University's central staff, and are considered members of their own faculty. For example, the Arts Faculty has appointed senior tutors in each of the fields of Arts, Art History, History, Literature, Music and Philosophy. Each of the senior tutors is assigned to one of University's 12 regions, where he acts as a general academic advisor on behalf of his faculty, and supervises the work of the class tutors and the academic aspects of the work of the correspondence tutors. Most regions have one or more of these senior tutors.[26,27,28]

C. Courses Offered

Because the Open University has just opened, the only courses now offered are at the undergraduate level. A description of the degrees which the University plans to award provide an indication of the framework within which present courses are offered.[29]

For the next few years, the B.A., requiring six credits, and the B.A. (Hons.), requiring eight credits, will be the degrees awarded. Candidates for each degree will follow one main line of study: arts, educational studies, mathematics, science, social sciences, or technology. (B.A.s rather than B.Sc.s will be awarded.)

For 1971, the four following foundation courses, each worth one credit, are offered:

A 100 Humanities: a foundation course (Arts)
M 100 Mathematics: " " " (Mathematics)
S 100 Science: " " " (Science)
D 100 Understanding Society: " " (Social Sciences)[30]

In 1972, the four foundation courses for 1971, as well as T100, The man-made-world: a foundation course (Technology) will be offered at the first level. In addition, a good number of second-level courses will be offered.

After 1972, it is planned that more second-level courses will be offered, along with a wide range of third-and fourth-level courses.[31]

Another interesting development within the Open University is the concern with post-experience courses. The Council and Senate approved the preparation of three 18-unit post-experience courses in 1970, the courses to be financially self-supporting.[32] It appears that the first post-experience courses will be offered in 1973, as follows:

Computer Education (mainly for teachers),

Industrial Relations (for people in industry),

Development of Competence in Reading (for teachers), and

Background to School Mathematics (for teachers).[33]

It also appears unlikely that these will be credit courses.

D. The Student Body

1. Numbers

In its Report, the Planning Committee provided several estimates of potential enrolment in the Open University. These included (i) those interested people for whom full-time higher education had not been available in the last three decades, i.e., 10 per cent of an estimated one million, or 100,000; (ii) about 10 per cent of the certificated non-graduate teachers in England, Wales and Scotland, i.e., 10 per cent of approximately 255,000, or 25,000; and (iii) on the basis of a survey conducted among a random sample in six areas of 3,000 adults over 21, from 34,000 to 150,000 people who it might be assumed would register as students.[34]

For the first year, 1971, it was decided to allocate "places" to 25,000 students. Dr. Walter Perry suggested the main reason for this decision. "...If the idea of an Open University were to succeed it seemed inevitable that the costs per student should be kept below the costs per student in conventional universities. It therefore followed that the enterprise must be conducted on a very large scale so that the overhead could be divided by a large number of students in order to reduce the cost per student to a suitable low level. This was the reason why we have begun with an annual intake of 25,000 students, a number that is equal to half of the total number of students admitted to all the other universities in Britain put together."[35] It should be noted that this number, in addition to being relatively high in comparison with enrolment in conventional institutions, also represents a maximum.

On the closing date for applications for enrolment in 1971, about 129,000 enquiries had been received, and a total of 42,821 applications for admission. By April 30, 1971, of 24,344 students assumed to have started work in January, about 18,000 or approximately 75 per cent had completed their first fees payments. (This figure may have increased after the cessation of the British postal strike.) In addition to the 25,000 students accepted for admission, another 6,000 were placed on a reserve list, and encouraged to apply for participation in the first level courses in 1972.

2. Criteria of Choice of Applicants

Originally, considerations of age, educational preparedness, and motivation had been considered as possible factors in determining the acceptability of candidates. However, since after inspection of the applications, age distribution appeared satisfactory, and, to a large extent, the factors of preparedness and motivation could be disregarded (less than 2 per cent of all applicants were unsuitable according to these criteria; some applicants were advised to withdraw, but at the same time permitted to let their applications stand), these criteria were not considered.

Five factors influenced the choice of candidates from among those who applied. First, as a rule, people under 21 years of age are not accepted as students.

Secondly, applications were accepted on a "first come, first served" basis, making the date of application of some importance.

Thirdly, the applicant's choice of courses was important. Of the 25,000 student "places," 5,000 were to be made available to students who took two courses each, giving a total of 30,000 student-courses. For 1971, the targets were as follows:

Mathematics	7,000
Science	7,000
Arts	8,000
Social Sciences	8,000
total	30,000

Fourth, the applicant's region of residence influenced the choice. In determining the number of "places" per region, the University considered the proportion of the total British population in the region, as well as the number of applications received from the region. Finally, the occupation of the applicant was considered on the basis of a "quota system".

3. Composition of the Student Body

Much of the following information has been taken from an Open University press release published in the fall of 1970.[36,37]

a) Age

"The most frequently recurring age of applicants is 26. About 40 per cent are between 25 and 34 years of age, and 7 per cent are over fifty. (The ratio of males to females is about 70:30.)"[38,39]

b) Date of Application

While, in a sense, the date of application is a purely technical consideration, it made a significant difference in at least two areas. First, the number of applications from teachers was originally very high, probably because teachers as an occupational group became aware of the opportunities provided through the Open University from the educational press, before other occupational groups became as interested. Secondly, applications from Wales and Northern Ireland lagged behind applications from other areas, and this fact is reflected in the allocation of places (See below). It is

interesting to compare this situation with that in Bavaria, where the experience of TELEKOLLEG demonstrated that regions farther away from the centre of activities (both geographically and socially) tended to be less interested in new educational offerings. The same factor, namely a kind of regional parochialism, may have been in operation.[40]

c) Courses Chosen

The following chart represents the wishes expressed by applicants, and the final allocation of places:

Table II-1:

Course Requests and Allocations, 1971 Session

Course	Number	% of Total	Target Quota	% of Target Quota
Mathematics	12,039	19.4	7,000	23.3
Science	11,605	18.7	7,000	23.3
Arts	16,939	27.2	8,000	26.7
Social Sciences	21,564	34.7	8,000	26.7
	62,147		30,000	

A higher percentage of places than there had been applicants were allocated for Mathematics and Science; for Arts, the percentage was approximately the same; and for Social Sciences, fewer applicants received "places" than the number of requests would have indicated.

d) Region of Residence

For the first 40,817 applications, the following chart

provides an indication of the allocation of "places" on a regional basis:

Table II-2:

Applications and Allocation of Places by Region, 1971 Session

Region	Applications July 1970	% of total applications	Allocated places	% of allocated places	Allocate places a % of app cations from the Region
London	7571	18.5	4503	18.0	59.5
South	4621	11.3	2813	11.3	60.9
South-West	2332	5.7	1411	5.6	60.5
West Midlands	3452	8.5	2238	9.0	64.8
East Midlands	2699	6.6	1765	7.1	65.4
East Anglia	3497	8.6	2282	9.1	65.3
Yorkshire	3112	7.6	1957	7.8	62.9
North West	4337	10.6	2873	11.5	66.2
Northern	2080	5.1	1356	5.4	65.2
Wales	1801	4.4	892	3.6	49.5
Scotland	3787	9.3	2262	9.0	59.7
Northern Ireland	1528	3.7	648	2.6	42.4
totals	40,817		25,000		

As noted above, the percentages for Wales and Northern Ireland of allocated places to the number of applications from the region

are relatively low.[41]

e) Occupation of Candidates

The following table indicates the number of applicants from several occupational groupings, and the number of places allocated to each:

Table II-3:

Applications and Allocation of Places by Occupation, 1971 Session

Occupational Group	Applicants		Quota of allocated places
	Number	%age of total	
1. Housewives	3,758	9.2	2525
2. Armed Forces	699	1.7	525
3. Administrators and managers	2,830	6.9	1150
4. Teachers	14,642	35.9	7750
5. Professions and the Arts	4,869	11.9	2150
6. Qualified Scientists and Engineers	3,275	8.0	2025
7. Draughtsmen, Laboratory Assistants and Technicians	3,037	7.5	2275
8. Electrical, electronic metal and machines and allied trades	730	1.8	750
9. Other manufacturing, farming, mining, construction, transport & communications	1,171	2.8	1275
10. Clerical and office staff	3,324	8.2	2525
11. Shopkeepers, sales, services & sport, recreation workers, Fire Brigade & Police	1,409	3.4	1150

(continued)

	Applicants		Quota of allocated pla
	Number	%age of total	
12. Not working (other than housewives!) retired, independent means	1,040	2.5	775
13. In institutions (prisons,etc.)	33	0.1	125
totals	40,817	100.0	25,000

Several points should be noted. First, about 4.5 per cent of the applications came from graduates, while a quota of 2.5 per cent was set for this group. It should also be noted that applications were accepted primarily on the "first come, first served" basis, with the quotas being brought into play to redress balances, as after some initially accepted candidates failed to take up the opportunity, others were chosen from the reserve list.

The very large number of applications from teachers has been emphasized by a number of observers. The Open University press release suggested that this preponderance was expected because teachers "are used to study, and have time to study for a degree."[42] There may be another reason. The education industry, like the chemical industry, is a very good consumer of its own products, and few professions demonstrate the ability to provide immediate economic advantages for their members after the acquisition of more education than does education itself. To be exact, there is a significant difference in the salaries of graduate and non-graduate teachers, other factors being equal.

This may help to explain the relatively low numbers in the occupational groups which contain semi-skilled and unskilled workers. In addition to social barriers, real or unreal, people in semi- and unskilled work may see little advantage in the kind of opportunity offered by the Open University.

f) Applications for the 1972 Session

In July 1971, at the close of applications for the 1972 session, 34,222 valid applications for a total of 42,442 courses were received.

Several general points may be made regarding these applications. Approximately 67 per cent of the applicants were men, as for the 1971 session. For the 1972 session, the most frequently recurring age has dropped from 26 in 1971 to 23. Significant changes may be noted in the occupations of the applicants; there was a drop from 35.9 per cent in 1971 to 30.2 per cent in 1972 in the number of teacher applicants, and an increase from 12.1 per cent in 1971 to 18.5 per cent in 1972 in the number of applications from technicians and manual workers. In 1971, 45 per cent of the applicants requested two courses, while only 25 per cent of the applicants have asked for this opportunity in 1972.

Four of the Open University's 12 regions were over-represented in the 1972 applications, judged by the general population distribution. These were London, the South, East Anglia, and Northern Ireland. It should be noted that the previous

apparent imbalance in the allocation of places by region has been changed, with the result that the number of allocated places as a percentage of total applications has increased significantly in the cases of Wales and Northern Ireland.

Table II-4:

Course Requests and Allocations, 1972 Session

Course	Percentage of Applicants	Percentage of Allocati
Arts	29.1	24.9
Mathematics	14.9	18.2
Science	12.9	17.8
Social Science	32.9	30.2
Technology	10.2	8.9

g) General Enrolment Situation

It is understood that the University will be limited to a student population of from 36,000 to 42,000 in 1973. Since a large number of 1971 session students are expected to continue in the 1972 session, it has been necessary to reduce the number of places for allocation in 1972 from approximately 25,000 to approximately 20,000.

E. Evaluation Techniques and Evaluation of Learner Performance to Date

Students of the Open University are evaluated on the basis of computer-marked assignments, and on the grades determined by the correspondence tutors after reading written assignments.

Because the Open University has been in operation for only a short period, little information is available concerning student achievement. It is known "that the number of students attending local study centres has generally been very high; that the number of assignments submitted on time has also been high; and that the assessments given both by tutors and the computer have been mixed but in large measure encouraging."[43]

F. Financial Matters

While the Open University provides educational opportunity at the university level, its public funds are received from the Department of Education and Science, rather than from the University Grants Committee, through which grants to traditional universities are channeled.

The following summary of Open University costs is available:

1.) Capital Expenditure

Approximately £4.5 million has been allocated for capital expenditure to the end of 1973, of which approximately

£2 million had been spent by the first quarter of 1971. This includes about £1 million for BBC capital costs. Government approval has been given for capital expenditure to the end of 1972.

2.) Recurrent Costs (in millions of £s)

a. 1970

Including salaries, operating costs, BBC recurrent costs	£ 2.1

b. 1971

Basic Recurrent Expenditure	£ 2.4	
BBC/OU Total Recurrent Expenditure	1.5	
Direct Student Cost (varies according to number of students)	2.7	
gross cost	£ 6.6	
Less - fees from students	0.8	
net cost		£ 5.8

c. 1972

Projected Net Expenditures (Note: This amount may drop as a result of the Government's decision to impose a limit of 20,000 students for 1972)	£ 6.5

d. 1973 (projected)

Basic Recurrent Expenditure	£ 2.9	
BBC/OU Total Recurrent Expenditure	2.0	
Direct Student Costs (variable)	4.1	
gross cost	£ 9.0	
Less - fees from students	1.8	
net cost		£ 7.2

3. BBC Costs

The cost of BBC services total approximately one-quarter of the total costs of the University. These funds are expended in the approximate ratio of 75 per cent:25 per cent::recurrent costs:capital costs; and 75 per cent:25 per cent::television costs:radio costs.[44]

4. General

When the Labour government was defeated in 1970, there was some concern that the new Conservative government would not permit the Open University to continue. For several reasons this did not prove to be the case, but in announcing the new government's decision to permit the Open University to continue, Mrs. Margaret Thatcher, Secretary of State for Education and Science added that "the Government intend in the context of their continuing examination of public expenditure to discuss with the university's authorities the future scale of its operations, the contribution that it can make to the higher education process in the future, and the prospects of increasing its revenue with a view to limiting the level of financial support from public funds."[45]

These three considerations--scale of operations, general application of the Open University concept in post-secondary education, the generation of revenue--have already had an effect on the University.

1.) Scale of Operations

In the first place, the number of new students for 1972 has been limited to 20,000, probably in an attempt to limit costs.

The fees paid by students--for 1972, these include £10 initial registration fee, £10 per foundation course, and £25 for the residential summer school[46]--cover only about 30 per cent of the direct student costs, or about 12 per cent of the total gross cost.

For 1971, assuming 30,000 student-courses, the direct student cost per course (including counselling and tutorial services etc., but not including the costs of central operations) is approximately £90. If the central recurrent costs are included (approximately £3.9 million for 1971), a further £130 per student-course should be added, for a total of approximately £220 per student-course.

2.) General Application of the Open University Concept

The Open University was requested by the Department of Education and Science to assess the effectiveness of possible pilot schemes which would permit enrolment of students under 21.[47]

3.) Generation of Revenue

Through its Publications Division, the University has mounted a major campaign to recover some of the costs of operations through sales of complete course packages and of elements of the instructional materials.

Chapter III: Funkkolleg

Introduction

Translated literally, "Funkkolleg" means "Radio College," but such a rendering is misleading. The efforts of the Hessian Broadcasting Corporation (Hessischer Rundfunk) have led considerably beyond its initiative in the establishment of the first Funkkolleg in 1966, in that, in addition to providing educational opportunity through radio presentations, the Corporation has been instrumental in developing educational systems which are based upon extensive co-operation among governments, educational institutions and broadcasting organizations.

The development of effective systems and of inter-agency co-operation was gradual, and can be illustrated in five Funkkolleg projects to date. These are:

1. Funkkolleg I: Zum Verständnis der modernen Gesellschaft (Towards an Understanding of Modern Society) - began fall of 1966

2. Funkkolleg II: Erziehungswissenschaft (Educational Science) - began spring of 1969

3. Funkkolleg III: Mathematik - began spring of 1970

4. Funkkolleg IV: Volkswirtschaftslehre (Domestic Economy Studies) - March 8, 1971 to July 25, 1971

5. Funkkolleg V: SPRACHE: Eine Einführung in die moderne Linguistik (Language: An Introduction to Modern Linguistics) - begins fall of 1971

A. Funkkolleg I: Towards an Understanding of Modern Society

1. Background

The first Funkkolleg developed in a German educational system within which expressions such as "overdue modernization," "educational deficit," and "educational catastrophe," and "democratization," "objectivization," "participation," and "rationalization" had gained wide currency.

Generally speaking, the entire system had undergone few changes since World War II, and still provided an essentially "exclusivist" approach to educational opportunity. The researches of Karl Erlinghagen, SJ, showed that in differing degrees, girls, Catholics, the children of working families, and people in rural areas were educationally disadvantaged. Through a series of circumstances, people of relatively high ability but who for one reason or another were unable to take advantage of regular educational opportunity, were excluded from further education. The university system was (and still is) threatened by a 100 per cent increase in enrolment, and even the most optimistic building plans could satisfy only a part of this growing need. At the same time, however, even with a significant increase in university enrolment, it was suggested that the entire output of graduates from German universities in 1970 would have to take up teaching positions if the needs of elementary and secondary schools were to be met.

Against this background of a period of search for more effective educational alternatives, the initiators of Funkkolleg concentrated their thinking on one problem area. There had always been provision for "make-up" opportunities for those who had broken off their studies or who had developed their capacities later than was recognized in the school system. This "second educational way" (Zweiter Bildungsweg), however, requires a complete commitment to re-entry into the system, and, as in many other countries, only a very small percentage of potential learners take advantage of it. Many others--particularly those in full-time employment and/or too far from regular "extension" activities--remain unable or unwilling to benefit. Funkkolleg was addressed in the first instance, therefore, to those able individuals who would wish to acquire the qualifications necessary for special university entrance, but whose place of work or residence made it impossible for them to acquire these qualifications in the traditional manner.

Another consideration provided direction as to the subject matter. Increasing concern over the role and effect of the social sciences (Ger. "Sozialkunde" or "Gemeinschaftskunde") in German education required intensified efforts both in the general academic field and in teacher education.

In the broadest terms, therefore, the first Funkkolleg

moved to provide opportunity in social science education for groups whose opportunities had been limited previously.

2. Organization and Structure of the Project

Four groups participated in the presentation of Funkkolleg I. These were Hessian Broadcasting, a group of faculty members from a Frankfurt university, the Ministry of Education for the State of Hessen, and Adult Education Centres in Hessen. The heaviest responsibility was borne by Hessian Broadcasting.

3. Course Offered

a) The Course Content of Funkkolleg I

To provide the necessary academic knowledge of subject matter, several members of the faculty of Johann Wolfgang Goethe University (Frankfurt a/M) were approached by Hessian Broadcasting, and their lectures were to provide the core of Funkkolleg I's offerings.

Before the beginning of the first semester, the initiators provided a preparatory semester, from May 5 to September 29, 1966, consisting of 22 typical lectures. The first and last described the nature of the future offerings, while five groups of four lectures each provided an introduction to the subjects and disciplines which were to be offered. The major purpose of these lectures was to prepare potential participants for the kind of involvement which would be expected of them, in order to minimize frustration and disappointment and

thereby hold down the number of "drop-outs."

The five courses, presented in one semester each, were as follows: i) domestic economics (Volkswirtschaft), winter semester 1966-1967;

ii) political science, summer semester 1967;

iii) law (Rechtswissenschaft), winter semester 1967-1968;

iv) modern history (since 1789), summer semester 1968;

v) sociology, winter semester 1968-1969.

b. The Presentation of the Material

During each semester, one 45-minute lecture and one 45-minute "conversation" (Kolloquium) were presented each week for 20 weeks, for a total of 40 radio presentations. The lectures were prepared and presented by the responsible professor, while the conversations were conducted among his assistants and doctoral candidates. Hessian Broadcasting provided radio time from 5 p.m. to 6 p.m. from Thursday to Sunday, which made possible repeat presentations.

It became evident quite early that the material presented on the radio was not sufficient, and steps were taken to provide participants with printed material, composed of bibliographies, "graphics", and texts referred to in the lectures. This material was supplementary in nature.

In addition, in response to an evidenced need, Studienbegleitzirkel (supplementary discussion groups) were instituted by the Adult Education Union of the State of Hessen, after chronic financial and teacher availability problems were overcome, on the one hand by a grant from the Volkswagen Foundation, and on the other through the creation of special courses for group discussion leaders and the assistance of university lecturers. Other informal opportunities for the discussion of course material were provided through the efforts of trades unions, and confessional and university extension educational facilities.

About one-third of all participants took part in these groups, which, like the supplementary printed materials, were not a mandatory element of the course.

During the law, modern history, and sociology semesters, enrichment television programs (limited in number) were provided, again to supplement the radio core of the course.

After its completion, the lectures, examinations, and answers to examination questions of Funkkolleg I were printed in their entirety by the Fischer Library. By April of 1970, 40,000 copies of each of the six volumes in the Funkkolleg I Series had been distributed.

4. The Student Body

a.) Groups for whom Funkkolleg was conceived

i) A decision of the Standing Conference of German Education Ministers, taken in 1959, had laid down that capable, mature students (at least 25 years old) who demonstrated particular ability would be permitted to enter university without the otherwise compulsory Abitur (Honour Matriculation). As a rule, this regulation required two separate Reference Certificates (Gutachten) from university professors, through the participation in whose lectures and seminars the particularly endowed student (hochbegabter Student) might receive the necessary qualification. The first group to whom Funkkolleg I was

directed was composed of this kind of individual.

ii) The second general group was composed of teachers. These included secondary school teachers, who wished to extend their qualifications so as to be able to teach in the social sciences, and elementary school teachers who wished to acquire the necessary qualifications to permit them to teach in secondary schools. For both groups, in addition to professional advancement, there was the added potential value of the "Kontaktstudium"--continuing/further education--which would bring them up to date with academic developments in the various fields of study.

iii) A third group for whom Funkkolleg I was considered to be of value were students already enrolled in universities, whose courses of study excluded the study of the offerings of Funkkolleg, but who were interested in the material. This group was not considered to be confined to students, as members of university faculties could also profit from the courses.

b) The Participants

i) General

During the preparatory semester, the number of requests for the scripts of the radio presentations was unexpectedly high, and in the course of Funkkolleg I, supplementary material was sent to approximately 3,000 participants.

Also during the preparatory semester, requests for participation were received from over 1,800 people, and from this group, whose members were requested to complete a questionnaire which would provide a sociological picture of the potential student body, exactly 1,300 questionnaires were returned. This group included about 100 teachers of all ranks, and approximately 500 listeners who wished to utilize Funkkolleg offerings as a means of obtaining the Reference Certificates necessary for special (mature student) university entrance.

For the individual Funkkolleg courses, the numbers of registered listeners were as follows:

domestic economics:	630	participants
" " (repeat):	350	"
political science:	650	"
law:	550	"
modern history:	600	"
sociology:	850	"

ii) The INFRAtest Study

In a random sample study commissioned by Hessian Broadcasting (1969), INFRAtest of München studied the progress of 928 participants whose initial application was correlated with later assignment and examination performance. This study provided an indication of the make-up of the student body,

reasons for participation, and the success levels of the various groups of participants. Some of the findings were as follows:

I. In accordance with the original conception of Funkkolleg, three groups of listeners were identified. These were mature students, students at some institution, and teachers. The teachers were further subdivided into elementary and secondary school groups.

II. Sex

Funkkolleg I was unsuccessful in making a change in the relatively low level of participation in educational opportunity by women. The following table indicates that Funkkolleg was less successful than some traditional offerings:

	Men	Women
1. Funkkolleg I	82%	18%
a) Mature Students	83%	17%
b) Students	80%	20%
c) Elementary School Teachers	77%	23%
d) Secondary School Teachers	87%	13%
2. Honour Matriculation Graduates, Hessen, July 1966	63%	37%
3. German University Students, Winter Semester, 1966-1967	72%	28%

III. Religion

Participation by Catholics was at the same level as the general population distribution by religion in Hessen.

IV. Residence

The under-representation of rural areas continued in Funkkolleg I. Large and middle-size urban areas were heavily over-represented in the entire sample, with a particularly large number of participants from suburbs and commuter towns about 16 miles (25 km) from city centres. It should be noted that almost three-quarters of the secondary school teachers were from towns and cities of from 5,000 to 500,000 inhabitants, whereas the Hessian general population distribution for the same areas stood at only 55 per cent. For the elementary teachers as well, the number of participants from towns of from 2,000 to 5,000 inhabitants stood at almost double the Hessian average. This suggests that Funkkolleg provided otherwise unavailable opportunities.

V. Schooling

Of the random sample participants, approximately one-third had the Honours Matriculation (Abitur), while not quite a further third had reached the "Middle" level, either in academic or vocational schools. The average level of educational achievement was considerably above that of the general population.

VI. Occupation

Initially, a very high percentage of participants came from the ranks of salaried employees and civil servants. The percentage of workers (about 5 per cent in the general population) was initially 2 per cent, and never rose above 5 per cent. The percentage of participants who gave their father's occupation as "worker" were: mature student candidates - 25 per cent; teachers, 18 per cent; students (in universities, etc.) - 11 per cent.

VII. Motivation

Nine-tenths of the candidates sampled gave as their prime reason for participation in Funkkolleg the desire to acquire the "Certificate of Achievement" (Leistungsbescheinigung), with 82 per cent interested in having a better base for vocational advancement.

5. Evaluation Procedures

a. The Testing System

Candidates proceeded to the Certificates of Achievement

through a process of selection (or of elimination) which consisted of several stages.

i) Of the large group of general listeners, some registered and were considered to be "Listeners." (Hörer).

ii) "Listeners" were required to demonstrate their active interest in Funkkolleg by completing at least one homework assignment per course. Those who did not do so were not permitted to continue towards the certificate. The work of those who submitted homework was graded.

iii) Those whose homework was of a high enough standard were permitted to participate in a written examination.

iv) Those whose achievement on the written examination was of a high enough standard were invited to an oral examination.

v) Certificates were awarded after the oral examination on the basis of this and other work.

b. Examinations

The certificates awarded after successful completion of each of the semesters of Funkkolleg I were given full recognition by the Hessian Ministry of Education. The regulations concerning the value of the certificates were as follows:

i) For capable mature students, two certificates were required for admission to university without the Abitur (the usual university entrance requirement).

ii) For secondary school teachers, five certificates were required to provide the recipient with the credentials necessary to teach the subjects of "Sozial-" or "Gemeinschaftskunde."

iii) For elementary school teachers, three certificates were required to provide these teachers with the equivalent of a secondary compulsory subject, which is necessary for qualification as a teacher of secondary schools (in turn the basis for admission to a higher salary category).
iv) Three certificates were required for teachers in vocational and vocational continuation schools, to entitle them to give instruction in general academic subjects (rather than technical subjects.)

6. Learner Performance

a. General

The best performance in the examination process, as might be expected, was demonstrated by the teacher group. These submitted more homework assignments on time than other groups, and consequently had a higher percentage of participants at later stages.

The number of courses taken by individuals correlated very closely with the requirements for professional advancement.

The poorest test results were demonstrated in the first domestic economics semester, and for this reason the course was repeated. Students probably experienced difficulty with what was a relatively new approach to learning. It is probable that individual students benefited in later courses from their experience during the first semester.

Participation in the discussion groups appeared to be the most important guarantee of success in the examination process. Isolated participants were less successful than those who worked on the course material with other students. To what extent participation in the discussion groups was the result of higher motivation, which itself may have been a factor in examination success, is not clear. (Attribution of success to participation in group work may be a post hoc ergo propter hoc fallacy.)

b. Particular

i) 37 per cent of all "Listeners" completed at least one course successfully.

ii) For the four groups of examination participants (those who qualified by submitting homework), the average number of courses taken, as demonstrated by the submission of homework, and the average number of certificates received were as follows:

Participant Group	Average Number of Courses Taken	Average Number of Certificates Received
Funkkolleg I	2.25	1.11
Mature Students	2.08	0.91
Students (university, etc.)	1.86	0.64
All teachers	2.98	1.98
Secondary School Teachers	3.30	2.46
Elementary School Teachers	2.86	1.77

iii) I. A total of 931 certificates were awarded, as follows:

- domestic economics	236	Certificates
- political science	209	"
- law	167	"
- modern history	131	"
- sociology	188	"

II. The number of special certificates (Sondergutachten; i.e., those in the top two categories, "very good" and "good") was 855, awarded as follows:

to mature student candidates	436	special	certificates
to secondary school teachers	121	"	"
to elementary school teachers	220	"	"
to students	78	"	"

An Observation

In looking back at Funkkolleg I, Prof. Gerd Kadelbach, Director of the Educational Broadcasting Central Division of Hessian Broadcasting, observed that this project had contained all the elements of a multi-media study system (Fernstudium im Medienverbund) before the idea or the word was used in Germany.

At the same time, however, he noted that the only major difference between Funkkolleg I and Wilhelm von Humboldt's concept of a university for "the privileged" or"notables" (Honoratioren-Universität) was the introduction of radio to take the place of direct traditional lectures.

The lectures were presented by subject-specialists, with

no room for dissenting opinions. The discussions were held by academics who tended to examine subject matter in greater depth, rather than provide clarification or explanation. Language and information barriers, as a result, were significant. Participants were not involved in the development of the courses. The supplementary material was not designed to achieve a particular didactic purpose. Group discussions, when they took place, were more in the nature of preparation for examinations than attempts to investigate more deeply underlying questions. Finally, the oral examinations were very traditional, and tended to be confrontations between the examiner and the candidate.

The experience of Funkkolleg I and reflection on its nature and results led to significant changes in subsequent models.

B. Funkkolleg II: Educational Science

1. Background

Three major considerations contributed to the development of the second Funkkolleg project.

In the first place, the essentially traditional approach of Funkkolleg I reflected some of the characteristics of the relatively unchanged German educational system--characteristics which were becoming the objects of increasing criticism. Authoritarian teaching styles left little room for democratization or participatory approaches to the development of learning opportunities. Because of teacher shortages, teacher training time had been reduced, and increased emphasis was placed on the content of subjects which candidates would ultimately teach. Paedagogy, psychology and anthropology had actually lost ground in the courses of instruction of teacher training institutions as a result.

In contrast to this apparently retrogressive trend, however, were a series of other important factors. Much greater public interest in the nature and practices of educational systems had developed. Among professionals, there was a growing conviction that much more had to be undertaken by the educational system in the areas of social and community studies. (The offerings of Funkkolleg I demonstrated this commitment.) Throughout education in general, there was a need for more teachers, whether in the schools, or in the fields of adult

education, religious instruction or military training. The choice of educational science as the subject matter of Funkkolleg II was based on these considerations.

Secondly, considerable interest had been demonstrated outside Hessen for the offerings of Funkkolleg I. (Of the random sample studied for Funkkolleg I, 23 per cent of the participants lived outside Hessen.) Efforts were to be made in Funkkolleg II, therefore, to extend the geographic area served.

Finally, in addition to existing agencies, two new, potentially co-operating agencies had been established. These were the German Institute for Remote Studies (Deutsches Institut für Fernstudien = DIFF) at the University of Tübingen (See Appendices 4, 5, 6 and 7), and the Office for the Co-ordination of Electronic Data Processing Applications in Education, a part of the Ministry of Education of the state of Baden-Württemberg.

2. Organization and Structure

a) To facilitate the extension of Funkkolleg II beyond the boundaries of Hessen, two steps were necessary. The first was the creation of the Quadriga--the four-horse team--of broadcasting organizations. The Intendants (top officials) of i) Hessian Broadcasting (Hessischer Rundfunk, covering the State of Hessen);

ii) South German Broadcasting (Suddeutscher Rundfunk, covering the northern half of the present German State of Baden-Wurttemberg, i.e., that part of the State which was included in the American Zone of Occupation after World War II);
iii) South West Broadcasting (Sudwestfunk, covering the present state of Rheinland-Pfalz (Rhineland-Palatinate) and the southern half of Baden-Wurttemberg, the entire former French Zone of Occupation); and
iv) Saarland Broadcasting (Saarlandischer Rundfunk, covering the State of the Saarland) agreed to co-operate in the transmission of programs.

b) Secondly, the Ministries of Education of the States of Hessen, Baden-Wurttemberg, Rheinland-Pfalz, and the Saarland agreed to recognize fully the certificates awarded by Funkkolleg. (The negotiations which led to this agreement extended ultimately to the Standing Conference of the Ministers of Education of all the German States, and in March 1970, the offerings of Funkkolleg were recognized fully throughout West Germany.)

c) The German Institute for Remote Studies co-operated in the presentation of Funkkolleg II from the beginning, and accepted the responsibility for the preparation of complementary materials which were sent to participants.

d) In the fall of 1968, Professor Wolfgang Klafki, Director of the Education Science Faculty (Erziehungswissenschaftliche Seminar) of the Phillips-University in Marburg was approached

by the Quadriga organizations and asked if he would provide the academic content for the two semesters of Funkkolleg II. He agreed, but at the same time suggested that his entire staff (himself and seven colleagues) undertake the project as a team. This proposal was accepted immediately.

e) The initial difficulties experienced by the Adult Education Centres (Volkshochschulen) were examined thoroughly, and courses for discussion group leaders were established. Adult education unions in each of the four states participated in the preparation and execution of Funkkolleg II.

f) The office for the Co-ordination of EDP Applications in Education (Koordinationsstelle fur elektronische Datenverarbeitung im Bildungswesen) of the Ministry of Education of Baden-Württemberg (Stuttgart), in co-operation with the IBM Germany Educational Computation Centre agreed to provide test-marking facilities and information feed-back to participants.

g) To facilitate planning and co-operation among the agencies which participated in Funkkolleg II, a Planning Commission was created, including representatives of the broadcasting organizations, the ministries of education, the universities (including colleges of education), the DIFF, and the State Unions for Adult Education. This Commission agreed on the division of labour, responsibility, control, and financial commitment among the co-operating partners.

3. Courses Offered

Funkkolleg II provided a two-semester course in educational science. It can be examined according to content and the systematization of the interrelationsnip of the didactic elements of course presentation.

a) Content

i) The primary purpose of the educational science course was to provide the means whereby a critical consciousness of the scientific aspects of education could be developed. To Professor Klafki this involved first the development of critical faculties vis-à-vis the historical and social concepts within education, and secondly, the development of a scientific approach not only to a consideration of assumptions and possibilities which could lead to a modification of existing institutions and practices, but also to the development of rationally based processes through which the change and improvement of educational practices could be undertaken.

ii) The course included a heavy emphasis upon the formulation of the major questions in educational science, and the development of terminology, as well as an introduction to some of the research methods of the discipline. Two major divisions were treated in the exploration of questions and terminology--on the one hand, educational objectives; on the other, the conditions and hypotheses which have a bearing on the achieve-

ment of educational objectives. Most of the examples and illustrations for this part of the course (approximately two-thirds, i.e., eight of 12 major headings) were drawn from school situations.

Other topics treated less extensively included the relationship between educational theory and practice, as illustrated in teacher training and in the existing relationship between educational planning on the one hand, and educational theory and practice on the other; and the nature of existing educational situations, when community and adult education were introduced along with the school experience. In the latter, an attempt was made to apply the critical apparatus developed in the first part of the course.

b) The Elements of the System

The individual elements of the system, as presented to the participants, included

- 40 radio programs, each one hour in length, (20 in each of two semesters);
- eight sets of complementary printed material (Studienbegleitbriefe), each of which contained five parts, i.e., one part related to each of five radio programs;
- discussion groups conducted by the Adult Education Centres, usually held once a week;
- one or two homework assignments per semester;
- one examination per semester.

i) The Radio Presentations

The 40 radio programs were prepared collectively by the Marburg Educational Science Faculty, which accepted collective responsibility for the scripts. There developed a form of team-teaching, in which Dr. Klafki acted somewhat in the role of a moderator.

Attempts were made to break away from traditional lecture styles. No parts of the programs were permitted to last more than 18 minutes, and between segments musical interludes were introduced. A variety of approaches was taken to the individual program segments. These included short lecture passages, interspersed with statements from authorities; informational passages, presented by an announcer; dramatic scenes to be used as the basis of later discussion; analysis of these scenes; and discussions among team members on the points raised in other segments.

The prime purpose of the radio transmissions was to encourage listeners to adopt a critical stance in the examination of the material presented.

Some of the problems which were identified in the nature of the radio presentations were the language and conceptual difficulties arising out of the widely differing backgrounds of listeners; the failure, on balance, to really break away from traditional lecture styles (as illustrated in the lecture passages themselves, the "staged" nature of the discussions

and the absence of enough examples of opposed or critical views); and finally, an imprecise understanding of the most effective role for radio as part of a systematic multi-media educational presentation.

Each of the four participating broadcasting organizations transmitted each program twice, so that for some listeners near the centre of the geographical area served, there were eight opportunities at different times to listen to the programs.

ii) The Complementary Printed Material

Together with the discussion groups, the complementary printed materials were designed to provide listeners with opportunities for active participation in the learning process initiated by the radio presentations, by making available practice and self-checking opportunities, and by motivating further study.

The achievement of this objective was attempted in several ways:

I. The complementary material provided the thread of the radio presentations, along with important dates, names, etc.

II. The use of additional material was encouraged through the provision of a wide range of carefully designed self-tests (with answers), bibliographies, study aids, etc.

III. Particular attention was paid to the form in which the printed materials were presented (e.g., in the use of type faces, colour, marginal notes, cross-referencing, etc.).

IV. Each set of material included an extensive glossary, to aid students to whom reference works were not available.

Problems associated with the preparation and nature of the complementary printed materials included a lack of research into the best forms for the presentation of this material as well as uncertainty regarding the theory and practice of blending the elements of radio and print.

iii) The "Discussion Groups"

The expression "discussion group" has been translated loosely from the German "Studienbegleitzirkel"--literally, a "circle to accompany studies". "Discussion group" is therefore somewhat misleading, as it fails to convey quite accurately the integral nature of the "Studienbegleit-zirkel's" role in the Funkkolleg learning system, as foreseen by the initiators of the project. However, experience in Funkkolleg II in the operations of discussion groups varied considerably, and until this element of the system has been as well developed as the other parts, a general expression like "discussion group" may be more appropriate than something more exact.

The major purpose of the discussion groups was to provide assistance in the development of a critical consciousness in the study of educational science. With the radio programs providing informational input, and the complementary printed material providing review and reinforcement opportunities,

it was hoped that the discussion groups would enable participants not only to clear away misunderstandings and prepare for tests, but also to deepen their understanding of Funkkolleg presentations and their own personal experiences as they developed their critical faculties.

A total of 103 discussion groups were organized--29 in Hessen, 49 in Baden-Württemberg, 14 in Rheinland-Pfalz, and 11 in the Saarland. In the last two cases, some difficulty was experienced in recruiting group leaders, as the introduction of Bavarian Broadcasting's TELEKOLLEG into these areas at the same time meant that there was a real shortage of personnel. Efforts were made before the course began to train more leaders, however; one indication is that the number of courses for group leaders increased from nine before Funkkolleg I to 30 prior to Funkkolleg II. In addition, a large number of educational institutions, including universities and teacher training colleges, created groups for study based on the Funkkolleg offerings.

The actual composition of the groups varied considerably. Some met the foreseen standard of from six to ten participants with a leader, but the average number of people in the groups was 15. One Frankfurt discussion group was composed of about 30 people and no leader, but rather four tutors, two or three of whom were always present.

Usually, the groups were held once a week, in sessions lasting from one and a half to two and a half hours, not far

from the participants' homes. Here again, however, there were exceptions. There was at least one weekend school, and at least one group in a somewhat remote area averaged trips of 20 miles each way to hold their group's meeting.

About one-third of the final examination candidates attended the groups, as participation was voluntary. These candidates did slightly better, on average, in the examinations than did their colleagues who did not take advantage of the discussion group opportunities. This conclusion may be misleading, however, in that teachers (who were heavily represented in the participant population) were sometimes even more strongly represented in the discussion groups. Their relatively more advanced educational backgrounds may have been an important factor both in their participation in group work and in their higher achievement.

An Observation

As the only element of the Funkkolleg system which involved a social process as opposed to work undertaken in isolation, the discussion groups were particularly important for a subject like educational science. They were not completely successful, but the experience with these groups will provide valuable direction for future undertakings.

First, the whole idea of discussion groups can be a problem for a system like Funkkolleg, because the successful operation of the groups within the system requires a nice

balance between the needs of the system and the personal initiative of the participants, particularly the group leader. If too much emphasis is placed on the system--in the case of Funkkolleg II, the discussion of radio and printed materials--then the needs of the individual learners may be overlooked, and the discussion groups can become simple pre-examination cram sessions. On the other hand, if a discussion group follows only its own interests, the value of the other elements is reduced. Navigating between these two extremes calls for real skill on the part of the group leader.

Secondly, in my opinion, too much emphasis cannot be placed on the need for a body of skilled teachers who can help make such a system operate effectively. Their role is much more difficult than that of the traditional classroom teacher, whose control over both student and content reduces the number of unusual situations in which he must provide effective and flexible responses. Teachers in a system comprising many elements must be able to work well in their own immediate sphere of responsibility; they must also grasp fully the nature and content of the other elements, so that their own work contributes to the success of all the elements.

Finally, it should not be assumed that the new modes of learning which are part of such a system can be grasped by all learners on entry into the system. Consideration must be given to questions of "learning how to learn" in and from multi-

media systems and provision should be made for learning the techniques of learning for the participants in such systems.

4. The Student Body

The organizing agencies anticipated about 10,000 applications for participation in Funkkolleg II, but by the close of applications for the first semester (May 1, 1969), approximately 15,000 applications had been received. During both semesters, approximately 12,000 took part.

A complete study of the make-up of the group is not yet available, but from some random samplings, the following broad description of the "student body" may be gleaned:

a. Occupation

As was to be expected, a very large proportion (almost 50 per cent) consisted of all types of school teachers, either fully or partially certificated. Other groups included students in full-time university study, social workers, instructors active in adult education, and the group of capable mature students who sought admission to regular university studies.

b. Age

In one random sample, the average age of participants was 32, somewhat higher than for Funkkolleg I. This may be related to the high number of teachers, who enter their profession at a later age than the general population.

c. Educational Background

Here again, the large number of teachers raised the median level of education completed by all participants to a fairly high point. Two observations may be made. First, as in the case of Funkkolleg I, previous educational success appears to encourage individuals to take advantage of further educational opportunities. A major responsibility of future projects would appear to be that of providing those who have the ability yet lack the experience in formal education with the motivation and the techniques necessary for success. Secondly, and associated with the first point, discussion groups, which include relatively large numbers of well-educated people, may not provide the best opportunities for those with less formal educational background; natural inhibitions may prevent those with less experience from participating in and benefiting fully from discussion group opportunities.

5. Evaluation Techniques

In each of the two semesters of Funkkolleg II, the office for the co-ordination of EDP Applications, assisted by IBM Germany, accepted responsibility for the marking and co-responsibility for the evaluation of student work.

For Funkkolleg II, full participation required the completion of one homework assignment and one examination (invigilated by the staff of the Adult Education Centres) per semester, as well as a final examination at the end of the second

semester. The homework assignments and the examinations consisted of questions, the answers to which could be computer-marked. The types of questions ranged from simple "yes-no" choices to rather complicated examples.

The procedure for the preparation and evaluation of testing materials was generally as follows:

a) Radio script writers and authors of complementary printed material prepared the assignments.

b) The Office for EDP Applications, along with the IBM Centre, translated the assignments into forms compatible with electronic data processing.

c) On the basis of the compatible questions, a sheet for recording answers was developed and copies of these were numbered consecutively.

d) The answer sheets were sent to a printing firm and then both question and answer sheets were despatched to the examination locales.

e) After completion of the examinations, question and answer sheets were sent to the Funkkolleg Central Office, and from there to the IBM Centre in Stuttgart.

f) From the answer sheets, the IBM Centre prepared two records of the answers. The first recorded the

answers of the entire answer sheet of each candidate as a block, while the second recorded in groups all the answers to each individual test item.

g) This record of responses to individual items was printed out and sent to the Examining Commission, to representatives of the participating Ministries of Education, to the initiators, and to the participating academics.

h) On the basis of this item-by-item print-out, the answers were analyzed so as to determine the reliability of the tests and parameters for the evaluation of the answers were established.

j) On the basis of the parameters established by the Examining Commission, the answers of the individual candidates were evaluated and given standing.

k) Each candidate was provided with the results of his examination, as well as an indication of which answers had been correct and which incorrect. The certificates were also prepared by the computer facilities.

6. Learner Performance

During the first semester of Funkkolleg II, approximately

6,000 participants completed the homework assignment. Of this group, 3,725 successfully completed the first semester examination.

The homework assignment during the second semester was completed by 4,000 participants, of whom 3,500 passed the second semester examination.

The final examination was written by 7,191 participants.

Generally speaking, participants in the discussion groups achieved higher results than non-participants.

C. Funkkolleg III: Mathematik

The basic organization and approach for subsequent projects has not differed fundamentally from the structures developed for Funkkolleg II. The following description of Funkkolleg III: Mathematics, therefore, concentrates on new conditions and on changes.

1. Background

In a decision taken in October, 1968, the Standing Conference of German Education Ministers called for the introduction of New Mathematics into elementary schools by the beginning of the 1972-73 school year.

To fill a need--the preparation of teachers for their new responsibilities in the teaching of New Mathematics--the initiators of Funkkolleg determined to provide through their system the necessary opportunities for interested teachers and others.

2. Organization and Structure of the Course

Much the same group of participating agencies developed Funkkolleg III. These included the Quadriga broadcasting organizations, the Ministries of Education, the DIFF, the Adult Education Unions, and the Office for Co-ordination of EDP Applications and IBM Germany.

In addition, the broadcasting organizations and the DIFF agreed to enlist the services of two professors (Dr. Heuser of Karlsruhe and Dr. Tillmann of Mainz), who accepted the general academic responsibility for the subject content of the project and provided advice and assistance to the radio script writers and to those who prepared the complementary material.

As in the case of Funkkolleg II, a Central Office and Examining Commission were established.

Radio programs, printed materials, discussion groups, and assignments were the elements of the system. The cost of television production and the inavailability of suitable transmission times precluded the use of this medium.

3. The Course Offered

a.) Content

i) The primary aim of the course was to provide participating learners with the basic concepts and methods of modern mathematics.

ii) The parameters for the organization and presentation of the material were determined largely by content rather than by paedagogical considerations. At least one authority, (K. Rebel), saw this as a potential source of difficulty.

iii) The major sections of the course were as follows:

I: Sets and Relations

II: Algebraic Structures

III: Natural Numbers

IV: Extension of the Number Domain

V: Elementary Instruction in Equations

VI: Elementary Probability

iv) The course was offered over two semesters, close to a full calendar year. Even so, the initiators of Funkkolleg III were concerned that the course might be too demanding, as a comparable university course involved four hours of lectures per week, along with a large number of exercises.

b.) The Elements of the Course

i) Radio:

The basic aim of the half-hour radio programs was to develop mathematical thinking, as well as to clarify and explain mathematical terms. The programs also served,

practically, to introduce written assignments.

Each of the four participating broadcasting organizations presented two one-half-hour programs back-to-back during a one-hour transmission period, with one or two repeats later in the week. This permitted students to utilize one or both of the programs during the one-hour period, as they wished. The transmission times for the four organizations were different, so that there was a significantly wide range of choices for listening times.

ii) Complementary Printed Material

Four types of printed material were provided for participants. First, pre-program reading introduced the next radio program. The first set of printed material was sent to students shortly after the closing date for applications, April 1, 1970, with further sets being sent as required throughout the duration of the course.

Secondly, an accompanying text was provided for study during the radio program. In this material, efforts were made through the use of colour and printing techniques to clarify the techniques and concepts of the radio programs. In addition, the printed materials were designed to overcome the one-way communications limitation of the radio medium. The third group of printed materials comprised exercises for completion after the radio programs, and the fourth an extensive glossary.

iii) The Discussion Groups

The primary aims of the "Studienbegleitzirkel" for Funkkolleg III were to overcome students' difficulties and to increase the number of opportunities for practice. Because of the nature of the course offered, the discussion groups were inevitably different from those of Funkkolleg II: Educational Science.

Participation in the groups, which as a rule were held once a week for two hours in the evening, was again voluntary.

Before the beginning of the course, group leaders were provided with sets of the complementary printed materials and with the opportunities to attend week-end orientation and briefing courses.

iv) Assignments

Successful completion of one major assignment per semester was again required for admission to the semester examinations.

4. The Student Body

The initiators of Funkkolleg III believed that the New Math course would provide opportunities for four groups of participants. These included teachers, who would be called upon to teach new math courses in schools; people in industry and commerce, whose work required the application of mathematics; students, including high school students who intended to go to

university and had had no opportunities to study New Math earlier, and university students, for whom the course would be of the nature of a preparatory semester; and the group of capable mature students, who wished to receive alternate qualifications for entrance into university.

Approximately 26,000 students enrolled in Funkkolleg III before April 1, 1970, and of these about 60 per cent were teachers.

D. Funkkolleg IV: Volkswirtschaftslehre (Studies in Economics)

1. Background

In their descriptive literature, the initiators of Funkkolleg IV cited the importance of an understanding of the workings of modern national economies as a contributing factor to political maturity, as well as the value of such studies for the development of analytical abilities and intellectual discipline.

Another factor which may have contributed to the decision to present economics as a Funkkolleg subject was the apparent difficulty experienced by participants in the first semester of Funkkolleg I.

2. Organization and Structure of the Project

In addition to the four Quadriga broadcasting organizations, the DIFF, the Adult Education Unions and Ministries of Education of Hessen, Rheinland-Pfalz, Baden-Württemberg, and the Saarland, and the Office for the Co-ordination of EDP Applications in Education (with IBM Germany), the Free City of Bremen participated in Funkkolleg IV, through the co-operation of Radio Bremen and the responsible education authority and Adult Education Union of the City.

3. The Course

a) Funkkolleg IV was prepared in co-operation with Prof. K. Häuser, Professor of Political Economy at J.W. Goethe University (Frankfurt a/Main), and presented from March 8, 1971,

to July 25, 1971. While the course included much of the same information as that included in the first semester of Funkkolleg I, it was reorganized and presented in a different fashion. As well, for Funkkolleg IV, participants were required (rather than encouraged) to obtain the printed complementary materials and text-book, and to complete the electronically directed homework assignments and tests.

b) The Elements of the System

Included in the Funkkolleg IV offering were radio presentations, complementary printed materials and opportunities to participate in discussion groups. (Studienbegleitzirkel).

i) The Radio Presentations

Two introductory programs were provided, in which Prof. Häuser explained the reasons for studying economics, and how the subject would be approached within the context of "multi-media remote studies" (Fernstudium im Medienverbund).

The course itself consisted of 19 one-hour radio presentations, each of which included two half-hour segments. The lecture for the week was given in the first half hour. In the second segment, other economists who disagreed with the lecturer presented their views, practical problems within the private and public sectors of the national economy were described by working economists, and some direction for the completion of assignments was provided.

In each of the five participating states, the programs

were broadcast and repeated once, utilizing a total of more than 30 transmitters.

ii) Printed materials

All registered students were required to purchase the complementary printed materials, as well as the textbook which had been prepared in conjunction with the Funkkolleg I semester on economics.

iii) The Discussion Groups

As in the other models of the project, participation by registered students in the activities of the discussion groups remained optional.

4. Costs

a) Costs borne by Individual Participants

Full participants in Funkkolleg IV could expect to bear the following direct costs:

i)	for the textbook	DM 4,80
ii)	for the complementary printed materials (5 books of approximately 80 pages each)	20,--
iii)	Discussion group fees	40,--
	Total	DM 64,80

It should be noted that this total is approximately DM 35,-- below the average figure received from potential participants when they were asked how much they were prepared to spend out of their own pockets in order to participate in the Funkkolleg project.

b) Costs borne by Organizations

The following are the cost estimates prepared for Funkkolleg IV, in anticipation of approximately 20,000 participants:

i) Costs borne by the State broadcasting organizations:

- development of the course outline (in co-operation with Prof. Häuser and his colleagues, as well as with the DIFF)	DM	6,500
- preparation and production of 19 programs (Note: This amount does not include costs associated with the Educational Broadcasting Director's Office, or indirect technical costs)	DM	30,000
- publicity (print and radio)	DM	16,000
Sub-total	DM	52,500

ii) Costs borne by Ministries of Education:

- preparation and distribution of materials for discussion group leaders	DM	21,000
- examination costs (including engagement of examiners, organizing costs, EDP costs, and publishing house costs)	DM	70,000
- central administrative costs associated with a final examination	DM	35,000

- equipping the Funkkolleg Central Office in Frankfurt (on a half-year basis), with staff — DM 40,000
- establishment of discussion groups in the appropriate Adult Education Centres — DM 15,000

Sub-total DM 181,000

iii) Costs borne by the DIFF (German Institute for Remote Studies)

- development, production and distribution of complementary printed materials, in association with J. Beltz Publishers (this includes only personnel costs. Printing and mailing were to be covered by student payments) — DM 118,500
- deficit on complementary printed materials — DM 65,000
- accompanying research studies — DM 20,000

Sub-total DM 203,500

iv) Costs borne by organizations such as Adult Education Centres

- introduction and training of discussion-group leaders — DM 10,000
- publicity for Funkkolleg — DM 10,000

Sub-total DM 20,000

Total DM 457,000

It is understood that the actual costs per student for the one semester Funkkolleg IV course were DM 49,-- (approximately Can. $ 15), not including attributable costs associated with the Educational Broadcasting Director's Office and with technical services.

E. Funkkolleg V: An Introduction to modern linguistics

1. Background

Significantly increased interest in linguistics, in particular as developed by Noam Chomsky, has become evident in Germany in the past few years. German universities have modified their philology studies, high school curricula are being modified to include a much more extensive study of linguistics, and new textbooks emphasize an approach removed from the essentially literary studies of the past. Coincidently, the teaching of foreign languages has taken on greater importance.

As in the case of previous projects, Funkkolleg V, when it begins in late September, 1971, will attempt to provide opportunities both in the field of continuing/further education and for those who wish to qualify for university entrance by the "second educational way."

2. Organization and Structure of the Project

The Quadriga broadcasting organizations, the DIFF, the Ministries of Education and Adult Education Unions of the States of Hessen, Rheinland-Pfalz, Baden-Würtemberg and the Saarland, and the Office for Co-ordination of EDP

Application in Education and IBM Germany will co-operate in the project. For Funkkolleg V as for Funkkolleg IV, the area served will include the free city of Bremen, through the co-operation of Radio Bremen, the Senator for Education, and the Adult Education Union of the City.

3. The Course

"An introduction to modern linguistics" will be presented in two semesters, from September 27, 1971 to July 17, 1972. Its major themes are as follows:

A) Communication and language:
- language as the most important tool of human communication
- development of a communications model
- considerations concerning the development of models in linguistics (Sprachwissenschaften) and the construction of grammars

B) Structuralism in linguistics
- the methods and concepts of structural linguistics
- examination of structural phonetics, morphology and syntax

C) Generative transformational grammar
- introduction to the theory of generative grammar
- syntax as the central component of grammar
- the development of an unlimited number of sentences from a limited number of principles

D) Semantics and practical considerations (Pragmatik)
- the semantical concept of classical structuralism as

opposed to that of generative grammar

- the development of models of relationships among speakers, listeners, and statements

E) Sociolinguistics

- linguistics in a social context

The elements of the course will once again be the radio presentations (in the time periods as illustrated in Chart 1), the printed materials (students will be required to pay DM 25,-- per semester for the complementary printed material), the discussion groups, and assignments and examinations. Two points might be noted. While participation in the discussion groups remains voluntary, greater efforts are being made to encourage listeners to join the groups. Secondly, the radio presentations in a course on linguistics and communications will provide, as well as information, opportunities to apply the concepts which are presented to the means of presentation itself.

4. The Student Body

In the informational/promotional brochure prepared for Funkkolleg V, the project is offered to a wide range of potential participants. These include teachers of German and foreign languages, language students in universities, students of other disciplines (sociology, psychology and education) in which linguistics are becoming more important, and those whose daily occupation provides

	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY	SUNDAY
10.00am – 10.59am							
11.00am – 11.59am						RB(R)	SDR(R)
12 noon – 12.59pm							
1.00pm – 1.59pm							
2.00pm – 2.59pm							
3.00pm – 3.59pm							
4.00pm – 4.59pm						16.35	SWF(R)
5.00pm – 5.59pm			SR(R)	HR		HR(R) 17.35	
6.00pm – 6.59pm							
7.00pm – 7.59pm				RB			
8.00pm – 8.59pm							
9.00pm – 9.59pm	SR, SWF	SDR		SWF(R)			
10.00pm – 10.59pm							

EXPLANATION

SR = Saarland Broadcasting (6 channels)

SWF= South West Broadcasting (13 channels)

SDR= South German Broadcasting (5 channels)

HR = Hessian Broadcasting (11 channels)

RB = Radio Bremen (2 channels)

(R) = Repeat

NOTE: all periods are one-hour in duration

opportunity to work with language (e.g., journalists, translators, publicity personnel, etc.). Certification and recognition will be provided for students, teachers, and mature capable students through the ministries of education of the participating states.

Chapter IV: Conclusions and Recommendations

Given the scope and implications of projects such as TELEKOLLEG, the Open University, and Funkkolleg, the attempt to draw from these experiments conclusions which may affect future developments in post-secondary education in Ontario should remain the responsibility of the Commission. The following points, therefore, are offered only as observations which may be useful in its deliberations.

A. While each interested person might begin with those aspects of these projects which interest him most, this study requires some assessment of the role of electronic technology at the outset. My observations may be summarized as follows:

1. While TELEKOLLEG makes the most extensive use of radio/TV in its educational offerings, this use can be described best as an example of "televised instruction." In effect, TELEKOLLEG attempts to use television as a multiplier of educational opportunity, inasmuch as a traditional approach to teaching is televised for the benefit of those who are unable to take advantage of existing opportunities. While there can be little doubt about the commitment of the initiators of TELEKOLLEG to extending educational opportunity, or about their relative success, the project has been most successful as a multiplier rather than as an agent of radical educational change. Professor Kadelbach's observations

on the first model of Funkkolleg (see page 95) might be applied, with appropriate modifications, to TELEKOLLEG.

2. Within the Open University, radio and television have become supplementary to printed correspondence material. Some observers have pointed out that radio and television have a very limited role, and that not much attention should be paid to them. These observers would point out that on a percentage basis (apparently determined by time), the elements within the Open University can be assessed as follows: correspondence, 70 per cent; personal contact (in Study Centres), 20 per cent; radio and TV, 10 per cent. Two questions should be posed, however: What is the percentage value within an individual's learning experience of a well-produced radio or TV presentation, and to what extent does the Open University need radio and television presentations to retain its image of openness?

3. The best use of electronic technology is demonstrated by Funkkolleg, where the exploitation of radio as an educational medium appears to be the most rational and potentially the most successful. In my opinion, this has resulted from a combination of factors, including a demonstrated willingness on the part of several partners to undertake the solution of educational as opposed to narrower organizational/institutional problems.

4. It should be noted that in the case of each of the projects, the jurisdictions within which the broadcasting agencies function are co-terminous with those of the responsible educational authorities. This is not the case in Canada and Ontario.

5. No reference is made in any of the studies to the use of cable facilities for television transmission, as the development and exploitation of cable TV in Britain and West Germany is far behind that in Ontario. This is a consideration, which, along with (4) above, may be of some significance in Ontario in the future.

6. If the Commission were interested in other projects of major importance, a study of the efforts of NHK (Japan Broadcasting Corporation) would provide further examples for comparison.

B. The use of computers in the Open University and Funkkolleg is interesting. In both cases, computers are used to facilitate administrative operations, rather than as instructional tools. The experience in both projects would suggest that such utilization of computer potential may be more fruitful, at least in the near future, than efforts to develop computer-assisted instruction facilities, which would have to overcome not only the technical problems of computer terminal availability, but also the more sophisticated problems which became evident during the

training of group leaders in TELEKOLLEG and Funkkolleg.

C. It is interesting to note that in none of the three projects described did the initial impetus for initiation of the experiment come from a ministry of education, from an agency responsible for university affairs, or from an existing educational institution. While the co-operation of ministries of education became important in each of the projects, their participation has generally been conservative or traditional in nature.

D. Three general considerations which may be of importance in Ontario should be introduced. These include (1) achievement standards, (2) questions associated with geographical factors, and (3) the organization and systematization of the learning experience.

1. (a) The standards established for TELEKOLLEG participants are much the same as those for students who have followed a more traditional educational path. As such, they provide an alternative to standards within an existing institution, namely that of apprenticeship/on-the-job training/part-time education.

   (b) The achievement standards of the Open University are those of an alternative institution. Every effort is being made to enable the Open University to grant B.A.s and eventually higher degrees (the standards of the institution of the university) which will be as acceptable as degrees granted by other universities.

(c) The Certificates of Achievement awarded by Funkkolleg are analagous to credits earned within a university. As such, they can be considered (after they have been recognized by existing agencies or institutions) for credit toward the granting of particular educational status. Unfortunately, fully effective operation of a system of credits such as those earned through Funkkolleg requires a non-institutional certification agency which can assess all achievement and grant status. This problem is closely related to the third question raised by the Commission on page 20 of its Statement of Issues.

2. It is difficult to draw exact geographical comparisons between Ontario and the areas in which the studied projects took place. While the province has a smaller population than the state of Bavaria, Great Britain and Northern Ireland, or the four states of Hessen, Baden-Württemberg, Rheinland-Pfalz, and the Saarland, the area of northern Ontario makes it far larger. If southern Ontario is considered by itself, on the other hand, at least from the points of view of size and social development, there is some basis for comparison. The approximate areas of the regions are as follows: (in square miles) southern Ontario, 46,000; England (alone), 50,000; Bavaria, 27,000; the four Funkkolleg states, 30,000.

In spite of the differences, however, some observations may be made. In the organizationally centralized Open University, Wales and Northern Ireland have significantly fewer participants than the University's other regions. Whatever the reasons--social differences, acceptance lag, or failure to provide similar services - such regional differences are hard to accept. The same kind of trend developed within TELEKOLLEG, as evidenced by the different levels of participation of metropolitan and rural areas. Funkkolleg experienced a similar rate of non-participation by people in rural areas in its first model. If the experience gained in the projects in Britain and West Germany is of any value, it may be worthwhile to consider different approaches to the solution of the same problem in different regions of Ontario. This may prove possible through the provision of centrally produced materials which are utilized in systems developed in different regions.

3. (a) As noted above, the learning system of TELEKOLLEG was relatively clearly defined by traditional approaches to situations in which the Bavarian project intervened.
   (b) Insofar as its system is concerned, the Open University's emphasis is upon the construction of a carefully designed instructional or teaching system, as opposed to the development of a learning system. Students

are "admitted" to "places" as in traditional universities, and while the use of such expressions may be an attempt to legitimize the University in the eyes of the academic community, they may also indicate that however systematic its approach to problems, the Open University's system is simply that of the traditional university.

(c) In my opinion, the approach of Funkkolleg may be the most important educationally. Several institutions and agencies have co-operated to serve rather than to control the learning process, and each medium is used so as to complement the others. In a sense, it is the learner's responsibility to develop his own system. However, as experience with Funkkolleg grows, there is increasing concern about refining the system so as to make it more effective. In particular, this involves increasingly careful interlocking of the complementary material, so that the combined effect will be more positive. This may lead, paradoxically, to the institutionalization of a relatively open system, the value of whose offerings until now have not been limited by the interdependence of complementary material. This indicates the nature of the dilemma associated with the use of broadcast radio and television for educational purposes. How can broadcast offerings

be made useful both for generally interested listeners and viewers, and at the same time be included within the range of offerings utilized by students in formal educational situations?

E. The large numbers of teachers associated with the Open University and with Funkkolleg raises some questions beyond any considerations of salary or status. When the Ministers of Education of the German States decided that New Mathematics should be introduced into the school system, they foresaw a four-year lag between their decision and the actual introduction of the New Math. Was this necessary because teachers (who need to be trained) were to be the multipliers through which the new course would be introduced? How long would implementation have taken if television and radio had introduced New Math directly to the students? By the same token, as post-secondary enrolment increases in Ontario during the next five years, what multipliers will be chosen to provide adequate opportunities for the increased number of students?

F. Finally, how can the experience--common to TELEKOLLEG, the Open University, and Funkkolleg--of the relatively low level of participation by lower income and rural groups be assessed? Are such people unaware of the advantages of

education, or do they need more information about the value of educational offerings? Or have they considered such offerings, and, for whatever reason, rejected them? Like the cups of tea, what is offered may not be everybody's educational opportunity.

The following suggestions are presented for consideration by the Commission:

1. Electronic technology provides certain capabilities which can be exploited within education. These include the recording, storage, and distribution of information. Electronic recording and storage potentials are similar, in the sense of the functions which they fulfil, to the recording and storage capabilities provided by disc records and moving pictures. The unique characteristic of electronic technology is to be found in its information distribution potential, whether in through-the-air or cable broadcasting.

It is important to differentiate among the functions which electronic technology can fulfil, inasmuch as the imprecise use of expressions such as "educational television" can lead to confusion. For example, a videotape recorder is an electronic storage (and playback) device. To suggest that this machine, which serves some of the same functions as film, is "educational television" is at best misleading. Such a description emphasizes the nature rather than the function of the machine and contributes to the false mystique of "educational television." It is important, therefore, that the Commission emphasize not what electronic technology is, but rather what it can do well.

2. The same approach can be taken to other contributors to educational experience, including teachers. It is often suggested that television cannot teach. Leaving aside the

fact that some so-called teachers also cannot teach, it must be admitted that television does not teach, but this acknowledgement is not an admission of inferiority. Rather, it is a recognition of the fact that a teacher is defined best by what he does, rather than by what he is, and that the teacher who fulfils his unique role is an economically irreplaceable contributor to the educational experience of the learner.

It is obvious that television cannot replace the teacher, when the teacher acts as the human, personal facilitator of learning. However, if the teacher is required to demonstrate in his own person the qualities of the research analyst, the writer, the brilliant lecturer, and the guide and counsellor in the learning experience, to large groups of students, then television (or radio) may well be able to fulfil some of these responsibilities more effectively.

In order to take advantage of all aids to learning--teachers, libraries, electronic technology, etc.--it is necessary to determine the unique characteristics of each one of these aids, and to ensure that the most fruitful contributions of each be emphasized.

3. Enthusiastic statements about the potential of television in education, combined with almost two decades of only limited success, have led in some quarters to a reaction against the medium. If electronic technology (and television in particular) were in fact to be presented as a ready-made solution for any educational problem, it would deservedly be viewed with

suspicion. It should be noted, however, that the inclination to present television as a solution to an undefined problem has many precedents, not least in education itself. As the scope of state-supported education has expanded, the solution to problems of growth has been a traditional one. Implicitly at least, old solutions have been accepted as the vessels into which new problems have been poured.

This could continue to be the case. In Ontario, for example, a significant increase in the number of qualified young people of university age is expected in the next decade. It could reasonably be assumed that the most probable solution to this problem will be a major effort to provide each qualified student with a university place.

Unfortunately, if such a solution were to be adopted, it would probably be another case of old solutions for new problems, rather than the culmination of a process which developed an appropriate solution for the new problem.

One would hope that such a process would begin with a consideration of whether or not the state, as the agent of society, has a responsibility to provide these young people with services. Assuming that such a responsibility existed, it would then be necessary to determine what kind of service should be provided, i.e., whether it should be educational, or financially supportive (as through a guarantee of income), or one which created jobs, etc. Assuming that the service

should be educational, it would be necessary to determine its purpose and to define its objectives as clearly as possible.

4. It is after the definition of purpose and objectives that consideration can be given to the organization of the educational experience, and to the resources and techniques which are available to help achieve the objectives. This means that electronic technology should not be considered before this stage, but, by the same token, it also suggests that other resources and potential should not predetermine the nature of the educational experience.

Ideally, the educational experience should be defined in terms of the learner's needs, i.e., his need for information, for discussion and argument opportunities, and for personal contact with learned teachers. When these needs have been determined, within the overall context of the educational purpose and objectives, the most appropriate techniques can be sought.

5. It would be naive to assume that one could take such an approach to the entire field of post-secondary education. The traditions and institutions of post-secondary education are strong, and, beyond any desire by particular institutions to retain control over this level of education, there would exist a natural and probably healthy skepticism about the results of any scheme which proposed a radical approach to all post-secondary education, no matter how valid such an approach

might be.

Three suggestions can be made regarding areas in which test projects could be undertaken. These include new offerings, i.e., those which are being introduced for the first time, and which are not similar to those offered in existing programs. Another possible field for development is to be found in programs for working graduates, as in teacher refresher or upgrading courses. The third area of emphasis would be in those fields in which difficulty has been experienced throughout the province, and in which teachers and educational administrators recognize the need for assistance. Success in a test project in these peripheral areas might encourage educators in traditional fields to consider the potential of such an approach in their own areas of responsibility. To determine the most appropriate area for the introduction of such a test project, an inventory of educational problems and responsibilities at the post-secondary level would be necessary.

6. If broadcast radio and television were to be used as an integral part of the post-secondary learning experience, questions concerning the importance of attendance at classes would naturally be raised. As well, the importance of attendance as a prerequisite for certification would have to be examined. Finally, the whole question of certification--prerequisites, necessary standards, responsibility for the granting of certificates of achievement, and the acceptability

of such certificates--has to be considered. This question lies beyond the scope of these recommendations, but it should be noted that without an accepted system of certification (one which is accepted by the granting agency, by the learner, and by those who use an individual's certificated achievement in their assessment of his suitability for a particular situation), even the best of projects will probably fail.

7. If broadcast or cable radio and television capability were required for the achievement of particular educational objectives, some difficulty might arise out of the fact that the federal government has jurisdiction over broadcasting. It should be noted, however, that agencies such as the CRTC and the CBC have demonstrated real willingness to co-operate with provincial government agencies in those cases where co-operation serves the interest of individual Canadians rather than the narrow interests of a provincial government. It may be necessary and useful, in the case of broadcast or cable radio and television, to invite the participation of federal government agencies at an early stage of the development of a particular test project.

8. If it were decided to undertake an educational project at the post-secondary level which involved the participation of universities, libraries and radio and television, a co-ordinated approach would have to be developed among the

Committee of University Presidents (and, in the appropriate situations, the Council of Regents of the Colleges of Applied Arts and Technology), the Department of Colleges and Universities, the Department of Education and the Ontario Educational Communications Authority. If accompanying research projects were to be undertaken, the participation of the Ontario Institute for Studies in Education would be of value. Some organization, encompassing all these groups, should be developed, so that the responsibilities associated with educational projects can be allocated to agencies with particular capabilities, within the general framework of the purpose and the objectives of the project.

Appendix 1: Financing Radio and Television in Bavaria

(The following information has been taken from the publication Broadcasting in Germany, prepared by the Standing Committee of Broadcasting Corporations in the Federal Republic of Germany.)

The figures refer to the situation as of July 1, 1969.

1. German radio and television are conducted on a non-commercial basis. The overwhelming proportion of income for operations is derived from licence fees: DM 84 for television (which may include a radio receiver), and DM 20 for radio alone per set.

2. As of July 1, 1969, there were 2,368,115 television receivers in Bavaria, and 3,171,287 radios.

3. Gross licence fees in Bavaria for 1969 were as follows:

for TV	: 2,368,115 x DM 84	DM	198,921,660
for radio	: 3,171,287 x DM 20	DM	63,425,740

4. The Federal Post Office, which collects the fees and provides technical services, receives 20 per cent of the radio fee, and 28 per cent of the television fee.

a) For radio, this leaves Bavarian Broadcasting with approximately DM 50,740,592, out of which the following services were provided:

i)	First program	136 hours per week
ii)	Second program	134 hours per week
iii)	Third program (programs for foreign workers in four languages)	36 hours per week

b) For television, this leaves Bavarian Broadcasting with approximately DM 143,224,000, which is allocated as follows:

i) for the Second German Program (from Mainz), financed by all the German broadcasting corporations, 30 per cent or DM 43,000,000;

ii) 70 per cent, or approximately DM 100,000,000 per year, out of which were provided

A. 17 per cent of the joint First Program or 6/7 hours per week

B. regional programming about 7 hours per week

C. Third (Educational) Programming, including TELEKOLLEG 42 hours per week

Revenue from the limited time for commercials (20 minutes per evening) and cost-sharing arrangements with smaller broadcasting corporations are not taken into account in the above figures.

Appendix 2: Estimates of Costs for TELEKOLLEG II

A.	Direct Costs		
1.	325 programs at DM 10,000 each		DM 3,250,000
2.	increase in editorial personnel from January, 1971, to December 1973, at DM 200,000 per year		600,000
3.	office and administration costs at DM 60,000 per year		180,000
4.	support materials		
	a) script fees for 325 lessons at DM 500 each	DM 162,500	
	b) designers' fees for 24 books at DM 3,000 each	72,000	234,500
	Sub-total		DM 4,264,500
B.	Associated Costs		
	Indirect production and technical costs		5,525,000
C.	General Costs		
	Applicable portions of costs incurred for personnel seconded for A. 2. and 3. (above)		5,720,000
	Total		DM 15,509,500

Appendix 3

The following article by Professor David Hawkridge, Director of the Institute of Educational Technology, The Open University, appeared in the Times Educational Supplement, April 1971, whose kind permission to include it in this Study is acknowledged.

THE OPEN UNIVERSITY AND EDUCATIONAL TECHNOLOGY

Everybody who knows anything about the Open University knows that it uses an unconventional instructional system. Some may realise how much planning and designing has had to go into that system. Probably few, however, appreciate the deliberate way in which the Open University is attempting to make use of educational technology.

Before the University was established, members of the Planning Committee foresaw some of the problems that would be raised in implementing the University's system, which includes correspondence tuition, television and radio broadcasts, nearly three hundred study centres, and summer schools. The Committee's report to the Secretary of State for Education and Science proposed that educational technologists be appointed in the University from its inception.

Today the Institute of Educational Technology is virtually a seventh faculty in the University, with a staff of about 30, including three professors. The work of the Institute falls roughly into two main areas: course development and institutional research, and its staff have been chosen with these areas in mind. Some of them are very much research-oriented, with backgrounds in psychology, sociology, statistics, and so on. The others are mostly people who have good degrees in zoology, mathematics, economics and the like, but who have moved away (in the last few years)

from the subject-matter itself towards a consuming interest in how it can be taught. Some of the latter group have also obtained specialised diplomas in the field of educational technology; some have worked on curriculum projects with Nuffield or the Schools Council.

The members of the Institute who work on course development are expected to advise the University's course teams and other groups on matters of instructional design. In fact, many of them are working directly with the physicists, the historians, the sociologists, the mathematicians, the technologists, and the educational psychologists, to mention only one group from each faculty.

In the course teams, for instance, Institute staff have been engaged in such tasks as defining the objectives of both the courses and the units within them; in commenting on the structure of the instructional materials; in preparing test-items and in processing tests for computerised scoring; and in arranging and interpreting the results from trials (developmental testing) of the materials on samples of potential students. All these activities are aimed at improving the effectiveness of the instruction.

Elsewhere in the University, Institute staff have been able to make contributions to the scheduling of course production and the establishment of a rudimentary program budgeting scheme, to the design of the University's admissions procedures, to the planning of summer schools, and to the tuition and counselling system. Together with the BBC, the Institute has initiated discussions on the uses of television and radio by the University, and a lectureship in media research is to be filled shortly. Limited projects have been mounted to improve developmental testing techniques and to evolve conceptual models for instructional units.

On the institutional research side, the Institute's main responsibility is to evaluate the instruction by measuring its impact on the students. This mammoth task has only just begun, along with the University's courses, but planning has been going on for some time. Over the past 18 months members of the Institute have been conducting an evaluation of a similar instructional system, that used for the NEC/BBC preparatory courses. A broad plan for evaluative research has been drawn up, and funds have been secured for portions of the plan.

The first part of the plan calls for a range of studies of the mass of data accumulating every week from the thousands of students of the University. All courses at the University include a strong continuous assessment element, and scores are derived for both tutor- and computer-marked assignments. In the first year of operations, for example, it is likely that the computer will place on file about 100,000 tutor-marked 'grades' and rather more computer-marked ones. The figures for actual question scores will be far higher, of course, and item analyses within questions will involve millions of characters. To establish a computer system capable of providing all the analyses that might be useful to the University would be very expensive. The development time would also be considerable. The Institute is concentrating at present on trying to determine which analyses will be most valuable; meantime the Data Processing Division is using the University's ICL 1902A computer to provide basic printouts for use by the course teams and Institute staff.

In addition to the assignment scores being analysed, the opinions of students about the course units, including the broadcasts, are also being collected and analysed, in a pilot scheme. Another project that has been mounted is attempting to evaluate the extensive tutorial and counselling services offered by the University.

The first part of the plan also calls for a number of 'experiments'. Some of them will arise naturally, others will need to be contrived. Among those in the first category will be studies of special groups of students, such as those who do not have television, and those who enter science courses without much background in mathematics. In the second category may come studies using instructional materials that have been modified in certain ways. None of these experiments can be begun until further funds have been secured.

The second part of the plan involves studies of the educational and occupational background of students in the Open University. An SSRC grant has been made that will allow work to begin in this area. In particular, money has been made available for the collection of data from the University's first cohort of students. An initial questionnaire has been sent to all students to cover in some detail their educational and occupational backgrounds, their work and leisure patterns, and their future plans.

Data from a representative sample drawn from the first cohort will be analysed this year to provide a basis for some of the University's major decisions about future courses. The remainder will be banked to form the basis of a longitudinal study of this group of students.

Studies of learning styles of Open University students constitute the third part of the plan. If it proved possible to identify just a few basic learning styles that were used by say 80 per cent of the students, then the effectiveness of the instructional materials might be improved greatly. The University might also make a fundamental contribution to learning theory. But no funds are in sight for such studies as yet, in spite of the unrivalled opportunities that are offered by the large student population.

The Institute has had a favoured start. It has been set up in a university where educational technology and institutional research are seen to be needed. Its members have been able to regard themselves as equal partners in the University's endeavours, rather than as staff of a service or advisory group occasionally called upon by a handful of academics. The University's courses bear a good many marks of educational technology, not in the sense of being disseminated through certain kinds of hardware but in the sense of being deliberately designed for the learner-at-a-distance. Nobody at the University, and least of all the members of the Institute, will claim that the courses are more than first approximations, first steps towards the ideal. On the other hand, financial provision has been made for revising the courses, and there are plenty of opportunities for the University's instruc-

tional system to be a self-improving one. The Institute of Educational Technology will have work to do, both in course development and institutional research, for many years to come.

So far, the Institute members have been proud of the fact that they work with others within the Open University far more than engaging in proselytising activities outside or talking with other groups of educational technologists. In time this will change: as expertise is built up in the Institute there will be something exportable to other institutions both in Britain and abroad. There is evidence of increasing interest in the applications of educational technology in higher education. In due time, the Institute may produce its own courses - and be compelled to practise all that it has preached.

Appendix 4:

The German Institute for Remote Studies

1. The German Institute for Remote Studies (Deutsches Institut für Fernstudien, hereafter DIFF), is a public foundation whose aims are "the planning, development and testing of remote-study courses at the university level" in the Federal Republic of Germany.

2. Three points of clarification and description follow. These are:

a) the explanation of "Remote-Studies" (Fernstudien)

b) the organization and structure of the DIFF

c) the work which the DIFF has undertaken, and its future plans, with particular reference to the efforts of FUNKKOLLEG.

3. "Remote-studies" is a term used to describe those studies which are undertaken without direct personal mediation by another person, i.e., at a distance from and independent of individuals who teach directly, (e.g., lecturers). These studies can be facilitated by a variety of non-personal materials - books, correspondence, films, TV and radio programs, etc. [The prefix "Fern-" in "Fernstudien" has no direct connection with the same prefix in "Fernsehen" (television).]

However, the director of the DIFF, Prof. Gunther Dohmen, points out that these so-called "remote-studies" are to be understood as "multi-media" "remote-studies" and not as a single-medium effort, as is the case in a course of studies based exclusively on correspondence work, or exclusively on TV presentations. In this connection, all methods and agents in the learning and teaching processes are perceived as "media".

The term which the DIFF uses to describe its concept of the utilization of the so-called "media-mix" is "Fernstudium im Medienverbund", (remote-study in a multi-media approach). This concept envisages a combination of direct teaching methods and the so-called "remote-study" components, based on learning and didactic principles, and upon a division of labour and responsibility which in turn is based upon the specifically differentiated functions and capabilities of both the personal and non-personal (or human and non-human) "media".

The Organization and Structure of the DIFF

4. Since its inception, the DIFF's role has been modified by other developments and factors in German education. Reference is made in the following, therefore, to the outlines of the origin and structure of the developing Institute, to educational factors and considerations which have helped to shape it, and to some of the resulting

forces in German higher education which have led to a new role for the DIFF.

5. In late February 1967, The Chairman and Deputy Chairman of the Volkswagenwerk Foundation signed the Articles of Association of the DIFF. The Institute, whose activities were to be supported for the first five years financially by the VW Foundation, was founded jointly by the Eberhard-Karls University of Tübingen, of which the DIFF is an integral part, by the Ministry of Education of (the state of) Baden-Württemberg and by the VW Foundation.

6. The organs of the Institute reflect the major influences at work in its creation and development.

i) The Board of Trustees included

a) two members designated by the Ministry of Education of Baden-Württemberg (hereafter MEBW),

b) three designated by the University of Tübingen,

c) one designated by the Working Group of the Paedagogical Colleges,

d) one named by the contributing Foundation (or later by the supporters of continuing financing),

e) two designated by the Permanent Conference (of Education Ministers of the German States),

f) one designated by the Federal Government, and

g) from four to eight co-opted members, to be chosen for their special knowledge and experience in the fields of remote-studies and science education.

ii) The Administrative Committee, whose members could also act as members of the Board of Trustees, included

a) a member sent by the U of Tübingen, who acts as Chairman of the Committee,

b) a representative of the MEBW,

c) the Chairman of the Board of Trustees,

d) the Chief Administrative Officer of the U of Tübingen, and

e) one more member, named by the VW Foundation or by later financial supporters.

iii) The Managing Committee (Vorstand) of the Institute consists of

a) the Director, appointed by the MEBW on the recommendation of the Board of Trustees and after consultation with the U of Tübingen,

b) the Deputy Director, named by the MEBW after consultation with the Administrative Committee, and

c) the Manager of Administration, named by the MEBW on the recommendation of the Administrative Committee.

7. Attention could be drawn to several characteristics of the DIFF, demonstrated either by the composition of its committees or by other factors. First, the DIFF was originally a south-western German organization based on the University of Tübingen, and not an 'all-German' group. Secondly, the interest of the Ministry of Education and the background of the DIFF's Director, Prof. Dohmen, along with much of its work, indicate major interest in

the field of teacher-education. Dr. Dohmen, Professor-in-Ordinary at the U of Tübingen for Educational Science (Erziehungswissenschaft) and a Chairman of the Adult Education Centres Union of Baden-Württemberg, has been concerned from the outset with the practical applications of the concept, Fernstudien im Medienverbund, in teacher-training. Thirdly, Prof. Dohmen's association with the field of adult education may have helped to provide the atmosphere within which concepts such as 'education permanente' or 'life-long learning', long established in the field of adult education, have been able to have some influence on the work of the DIFF. These matters are referred to below.

8. By August 1, 1970, the DIFF included 60 professional and 38 para-professional and clerical staff, as well as about 140 other professionals who participated with the DIFF in co-operative enterprises in addition to their regular duties. At the present time, the Institute is housed in eight separate and sometimes widely-separated buildings in Tübingen, and has begun to seek building sites in a number of German cities for a new central building. In addition, there are DIFF offices in Berlin, Frankfurt, Freiburg, Munich and Münster.

9. Reference should be made to several general factors in German education which have influenced the development of the DIFF. These include the following:

a) In general, there has existed for the last several years a movement to extend, to modernize and to democratize education in Germany. For example, the raising of the compulsory school leaving age has necessitated the training of more teachers, who in turn need educational opportunities to prepare them professionally.

b) New subject matter for old subjects and entirely new subjects have required major efforts in the further and continuing education of teachers.

c) Estimates of attendance at German universities suggest an increase from 1964 to 1981 of over 100 per cent. This estimated increase is accompanied by a correspondingly greater need for university teachers, ranging from an estimated 135 per cent for mathematics to 21.2 per cent for General Medicine.

d) Criticism of university situations, particularly over-crowded lecture halls and 'traditional' teaching practices, has led to a general call for reform and rationalization of university teaching and study processes.

10. Through a combination of factors, including the generally accepted educational imperatives and the efforts of the DIFF itself, the nature of the DIFF is changing. A far wider group of interested parties has become involved in

the concept of Fernstudium im Medienverbund, with the result that the DIFF's work may extend to all of West Germany and include many if not all the institutions of higher learning.

Appendix 5

Excerpts from the Decisions and Declarations of the Standing Conference of Education Ministers of the German States, compiled by the German Institute for Remote Studies Working Party

The following excerpts illustrate the continuing interest of the Standing Conference of Education Ministers of the German States in media affairs, and the course of their decisions which altered materially the financial and geographic bases of the German Institute for Remote Studies (DIFF.) The proposals contained in the Report of the Preparatory Committee may influence the future work of the DIFF.

1) On May 29 and 30, 1969, the decision was taken to "clarify the meaning and implications of Fernstudium [remote studies] and make clear the necessity of a comprehensive promotion and regulation" of the same.

2) On July 3 and 4, 1969, the Ministers of Education recognized that "overcoming the rapidly growing need for university places" was the most pressing problem. Among the most urgent needs in this area were those of a new university teaching method (Didaktik), which developed modern teaching and study methods, and the intensive and systematic use of remote study courses and of the possibilities of modern mass-media and instructional technology aids. The President of the

Standing Conference was empowered "to call together those interested in Fernstudium im Medienverbund (FIM) and those in participating agencies in a comprehensive informational discussion." A commission "would be established which would consider within the particular area of university television, on the basis of the concept of FIM, the legal possibilities of co-operation between radio and television organizations on the one hand, and State Ministries of Education on the other.

3) On November 27 and 28, 1969, the State Ministries of Education agreed to set about the establishment of an agency for FIM. They expected the following advantages:

a) Not immediately, but after the initial period, such an agency would provide real help in overcoming the problem of numbers.

b) These new methods of teaching and study would call forth didactical innovation in courses, which would be necessary from an educational-political point of view in any case, but which would be indispensable in overcoming the problem of numbers.

c) Teaching offerings (Lehrangebot) would be greatly improved through a multi-media approach.

d) More people who should be offered higher education would be reached.

A preparatory committee would be established for the prompt handling of the entire problem. This committee would have the right to establish working groups for the solution of particular problems and to call upon experts in this connection. The committee was given the task of presenting, by June 30, 1970, proposals for the development, organization, operational modes and estimated costs of a remote-study system.

4) On July 2 and 3, 1970, it was decided to indicate general agreement with the thoughts of the Preparatory Committee, but to charge the university committee with an examination in detail.

5) On October 8 and 9, 1970, it was decided to accept the recommendations of the Preparatory Committee as the basis for the final stage of realization, and to carry them forward for further discussion, particularly with the Conferences of Ministers-President and Finance Ministers; to charge the DIFF at the University of Tübingen with the co-ordination of the experimental phase; to work for an agreement among the states and perhaps the federal government and to introduce this agreement into the appropriate ad hoc Working Groups of the Federal-States Commission on Educational Planning; and to hold special discussions on the problem of the further financing of the DIFF.

6) On December 10 and 11, 1970, it was decided to bring into force the aim of the Standing Conference ... to ensure the continuing financing of the DIFF. The Working Party on the DIFF would be given the responsibility of preparing an appropriate decision for the Standing Conference. All the states would be requested to send a participant to these discussions. The results of the discussions of the Working Party should be presented to the Standing Conference by February 15, 1971, at the latest.

7) On February 5, 1971, because of the urgency of the matter, it was decided that the Standing Conference would take responsibility for the continuing financing of the DIFF after January 1, 1971.

Appendix 6

The Recommendations of the Preparatory Committee on FIM of the Standing Conference of Education Ministers of the German States

The Preparatory Committee was composed of thirty-nine representatives of interested organizations and agencies, as follows:

The Ministry of Education, Baden-Württemberg	2
The Ministry of Education, Bavaria	2
The Ministry of Education, Northrhine-Westphalia	2
The Ministry of Education, Rhineland-Palatinate	2
City of Hamburg School Authority	2
Federal Ministry of Education and Science	2
ARD (Standing Committee of Broadcasting Corporations in West Germany)	2
ZDF (Second German Television Service)	2
Conference of West German [University] Rectors	5
Conference of Paedagogical Colleges	1
Working Group of the German Engineering Schools	2
Working Group, the Principals of Schools of Economics	1
University Association	2
Federal Conference of [University] Assistants	2
Association of German Undergraduate Bodies	1
Co-operating Union of German Undergraduates	1
Student Association of German Engineering Schools	2

Broadcasting Commission of the Ministers-President	2
German Institute for Remote Studies	3
Volkswagen Foundation	1

I Fundamental Ideas of the Recommendations

The necessity of creating immediately an integral system of FIM at the university level is indisputable today.

This system, supported by the federal government and the states, should be included in a confederation of all universities and broadcasting corporations. It must contribute to the realization of the educational demands of society and, for its part, be of service to the reform of studies and teaching, increasing of the capacity of the universities, and the opening of universities to all. The development of the system in its particulars demands clarity about the organizational aims and the organizational "ground-rules" and it must adapt itself to long-term planning.

1. The organizational aims of FIM are:

a) the development of remote-study units, which can be integrated in the course of studies at all phases, from a preliminary (propaedeutical) course right through to continuing studies, e.g., the upgrading of teachers.

b) research in the area of FIM, including critical points, "Didaktik," and the organization of FIM.

c) the promotion of scientific training, particularly for science- and media-didactics, through direct participation in research and development assignments.

d) the co-ordination and co-operation of all participants, and the ensuring of information flow as well as the provision of central services.

2. The following "ground-rules" are to be kept in mind in the realization of the organizational aims of FIM:

a) The freedom of teaching and studying must remain guaranteed. From this it follows that the development and realization of FIM is under the aegis of the autonomy of the universities, and the organization of the remote-study system will be most successful in the legal form of a public corporation.

b) The unity of the university character and of the study-system is to be retained and encouraged. From this it follows that regular participation in FIM units requires enrolment at a university and offers the same qualifications as participation in direct studies, and the establishment of an independent university or of an interfaculty institute, whether for the development or for the realization of FIM is excluded, because these make possible neither the institutional co-operation of all universities nor the individual relationship of units of remote- and direct-study.

c) The efficiency of FIM must be guaranteed. From this it follows that the effective co-operation of the federal government and of the states, of universities and broadcasting corporations requires a confederation of all partners, and that the confederation will be most suitable in the legal form of a public

corporation, with differently constituted organs, and appropriately divided responsibilities and jurisdictions to organize.

d) The participatory rights of the universities and their member groups, as well as of the broadcasting organizations, must be ensured. From this it follows that all universities and broadcasting corporations should operate in the confederation together, and the universities and the broadcasting corporations would participate in the decisions and responsibilities of the confederation in the sense of these ground-rules.

3. Given the considerations concerning long-term educational planning, the two following points of view should be particularly emphasized for FIM:

(a) If they wish to join in the planning and development of the educational system, higher schools of every kind must join together in a communicating system of scientific organization. The system as a whole fulfils the scientific responsibilities in research, teaching and studies. The super-regional responsibilities serve to make the confederation of universities organizationally stronger.

From this point of view, the question is currently being discussed as to the form of a central self-administration organ which the universities will be able to create in the future. The development of a university confederation will leave the extent of their autonomy unchanged, but the importance

as between the participating universities and the confederation will be distributed differently. The organization of FIM can be considered as a building block for a general university confederation. However, FIM must first be designed to fulfill, through its aims, ground-rules and forms, the purposes of Fernstudium im Medienverbund. Thereby, it will serve the reform of studies and university didactic in all cases.

b) Attention must be paid to the fact that during the development of FIM, the tertiary level of education is not isolated from the other areas--school-systems, vocational training, and general adult education. Educational reform is an assignment which can be accomplished only sequentially; changes in one area have consequences in other areas. The particular importance of the introduction of FIM in the area of universities cannot lead to a situation in which the interdependence of the levels of education is overlooked.

II. On the Organization of a "Confederation for FIM"

Out of the basic thoughts in Paragraph I develops the recommendation to create a confederation of all participating partners in the form of a public corporation which is to be developed. The details of the organizational structure and of the considered, step-by-step build-up are formulated in the draft of an Agreement for FIM, which the Preparatory Committee presents as one of its findings. The draft is based on these considerations:

1. The assumption that it would be possible and useful to organize entire courses exclusively as remote studies is just as untenable as the expectation that a course can be meaningfully conceived with the help of radio and television as the carrying media. It is unquestionable that all or several media must be put to use in a combination one with the other, and that in all courses of all subjects, remote-study phases must be joined with stages of direct studies.
2. The general introduction of remote-study units requires permanent inter-operation of research work on the didactical applicability of all media, in conditions of on-going consideration of developments in the technical area; design and production of successively related "building-blocks", with differing combinations of media; and testing in ongoing studies at individual universities and scientific control of the experiments.
3. The academic work and the "media-didactical" research must be brought together in common development. However, neither the multiplicity of teaching points-of-view nor the further development of either area may thereby be restricted. Multiplicity and development must have direct results in teaching.
4. Research and development, therefore, should find their chief stress in the universities. However, they must be encouraged, coordinated, and brought together in a central agency, and stimulated by a permanent flow of information.

In the inter-operation of research, development and testing, this creates the need for co-operation between non-central and central project groups, directing subject Commissions, and a Centre for research and development. This is just as much the case in the early development phase as after the completion of a test-stage.

5. In the development of FIM and during the general completion of the system, it is not possible to take account simultaneously of all courses. The necessary decisions on priorities must be made from academic and university-affairs points-of-view, and with due attention to personnel, technical and financial capacities. For this reason, decision-making bodies must be created, in which these decisions are reached objectively and on the responsibility of all partners. The composition and jurisdiction of the Praesidium, Senate, Assembly (of Universities = Konvent) and Kuratorium are oriented as much to this purpose as to the needs for control and openness. In this connection, the Preparatory Committee considered whether leading citizens [Persönlichkeiten] in public life should be brought into the Kuratorium, but this proposal was not supported by a majority.

6. The Corporation which is to be created should include all universities and broadcasting organizations as members. The immediate inclusion of all universities is necessary--apart from the basic objectives--because, in the interests of those who are studying, the new study-units which are developed on

the responsibility of the Confederation must be recognized by all universities. (A contrary opinion concerning the participation of the broadcasting corporations was presented by Mr. Peter Glotz, a representative of the Conference of West German Rectors.)

7. Because the build-up of the system can be accomplished only in stages, a gradual development based on interim regulations is planned. During the first phase, the principal of voluntary participation by the universities is in force. For this reason, the Preparatory Committee has at this time made no proposal as to whether and when the introduction of the newly developed remote-study units should be made obligatory; it would point, however, to a close connection with restrictions and the removal of entrance limitations.

8. For the same reason, the objective of "opening universities to everyone" has not been translated into declarations fixed by regulation.

9. The Centre for Research and Development and the Office (Geschäftsstelle) are the central instruments of the Confederation. Both establishments, according to their responsbilities, work on the basis of different principles of organization. The Centre, operating on the basis of modern principles of scientific teamwork, is under the day-to-day leadership of one of the Directors, elected (for a definite period of time) by the Associates. The Office is under the

responsiblity of the President as an instrument of administration. The heavy majority of the Preparatory Committee recommends that the Centre and the Office should be joined together geographically and organizationally.

10. An important and probably decisive question for the success of the Confederation is concerned with the position of the Academic Associates ("co-workers") of the Research and Development Centre. The work of the Centre, which must extend itself to teaching methods and instructional technology, is critically dependent on the quality of the Associates and upon the possibility of their transferring from and to the participating universities. One idea which was raised in this connection was to give the Centre the status of a university with promotion and tenure rights but it was rejected. A better solution will follow if within the competence of the Corporation as an employer, the status of university lecturers can be guaranteed to the Associates...; in the opinion of the Preparatory Committee this should be regulated within Federal Law. In addition, it is expected that the participating universities will be obliged to look after the Associates of the Centre insofar as their professional status and their promotion and tenure are concerned.

III. Questions of Law

Some of the many problems at law were identified. They included the following:

1. There is a need for individual consideration in each State of the proposals, and there may be a need for new laws. University participation may necessitate a change in State law. Also, the Associates' position must be guaranteed in law.

2. Financing by federal and state governments can be accomplished through existing laws.

3. Participation by broadcasting organizations will require changes in their charters. With the agreement fully in effect, other internal arrangements in and among the broadcasting corporations will be necessary for their full participation in educational responsibilities.

4. Particular problems are raised in the production of remote-study units. The problem of copyright is being treated in a study financed by the Volkswagen Foundation.

IV. Resource Requirements

1. In 1969, the German Institute for Remote Studies estimated the investment costs for the construction and equipping of the central establishments of the Confederation (the Research and Development Centre, and the Office) at DM 83,000,000. This is based on a staff of 426.

2. The operating costs for the organs and offices of the Confederation, after the completion of staffing, are reckoned at approximately DM 21,000,000 per year.

3. The costs for the development and production of study-units are not included in these amounts. The Preparatory Committee recommends that after consideration of the basic

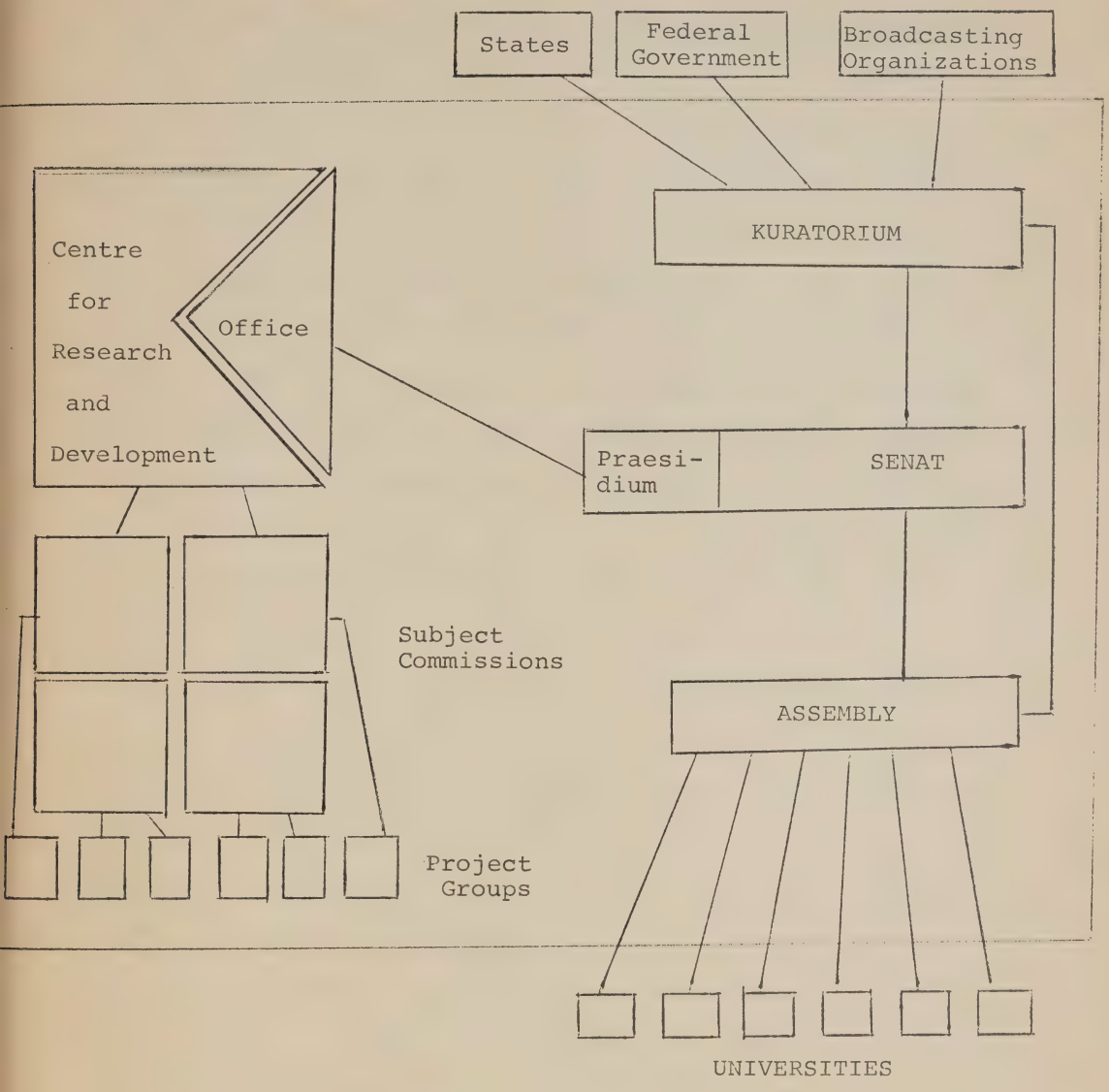
questions, the opinion on costs from 1969 be brought up to date, and at the same time that the information about the production costs of remote-study units be improved.

V. Proposal

The discussions of the Preparatory Committee have determined that the signing of an Agreement is the proper and important next step for the realization of the decision of the Standing Conference of Education Ministers. To this end, it has worked out a draft of such an agreement, and recommends the immediate entering into discussions on the signing of the accompanying draft.

Organizational Plan

Confederation for Remote-Studies



Appendix 7

Some University Developments in connection with FIM

Most of the following initiatives were taken by the West German University Presidents.

After the West German University Presidents' Conference (WRK) asked its participating universities on December 1, 1969, to appoint Senate Commissions and Senate Delegates for FIM, these delegates from the universities and paedagogical colleges have made known their agreement with the organizational proposal of the Preparatory Committee of the Standing Conference of German Education Ministers in several resolutions.

On December 2, 1970, these delegates suggested the creation of a provisional Fernstudium Confederation as a self-governing organization of the universities.

The plenary session of the West German University Presidents' Conference accepted the proposal on December 7 and 8, 1970, and requested that all universities, through appropriate decisions of their Senates, declare their participation in the provisional organization by January 15, 1971, and agree to the sending of delegates (as foreseen) to a provisional Fernstudium assembly at the federal level.

On this basis, a University Association for Fernstudium was constituted at Bonn on January 26, 1971, which nearly all the universities in the Federal Republic and a large number of

paedagogical colleges joined. This Association is much the same as the Assembly [Konvent] recommended by the Preparatory Committee.

On February 15, 1971, also in Bonn, the participants chose a three-man Managing Committee [Vorstand] and a nine-man Standing Committee, much like the Praesidium and Senate of the Preparatory Committee's recommendations.

Also on February 15, 1971, this Assembly expressed the point of view that other higher education establishments, particularly engineering schools, should be encouraged to take part in the University Association for Fernstudium.

Sources and References

Chapter I: TELEKOLLEG

Most of the information contained in the study of TELEKOLLEG is contained in a series of three books prepared under a grant made by the Volkswagen Foundation, entitled TELEKOLLEG im Studienprogramm des Bayerischen Rundfunks: Wissenschaftliche Begleituntersuchungen, (München, Bayerischer Rundfunk, 1969 and 1970). These books consist of a series of articles, learned papers and research findings on the first years of the project. Other sources used include the descriptive and promotional material prepared for TELEKOLLEG, as well as the text-books used in the courses.

References in the text are as follow:

1. Hans Schiefele: "Soziologische Fakten und Zusammenhänge", in Wissenschaftliche Begleituntersuchungen, Vol. 1, 22.

2. B. Paulu, "Europe's Second-Chance Universities," in Educational Broadcasting Review, 2, No. 2, June 1969, 60-82.

3. "Social distance" refers to the degree of separation of the home from those modes of thinking, characteristic of some classes and groups in society, which acknowledge the value of educational opportunity and place a relatively high value on the acquisition of formal education.

4. TELEKOLLEG Wirtschaftsgeographie: Lektion 1 bis 13, (München, TR-Verlagsunion, 1970)

5. Schiefele, "Soziologische Fakten...", 23-24.

Chapter II: The Open University

1. References as quoted by the Rt. Hon. Harold Wilson, then Prime Minister, in a Speech to the First Congregation of the Open University, at the Royal Society, London, 23 July 1969.

2. Harold Wilson, "The Relevance of British Social Democracy," Encyclopaedia Britannica Book of the Year 1964 (Chicago, Encyclopaedia Britannica Inc., 1964), 16-43.

3. Ibid., 29.

4. Ibid., 29-30

5. Command Paper 2922, A University of the Air (London, Her Majesty's Stationery Office, 1966)

6. Ibid., 6.

7. The Report of the Planning Committee on the Open University (London, Her Majesty's Stationery Office, 1969).

8. Ibid., para. 37,11.

9. Ibid., para. 18, 5.

10. A University of the Air, para. 3, 1.

11. "Regression to the norm" is an apt expression used by Mr. Norman MacKenzie, Director of the Centre for Educational Technology, University of Sussex, member of the Open University Planning Committee and Council, to describe the tendency in institutions to revert to established practices, whatever their plans may be.

12. Transcription of a telephonic talk held by Dr. Walter Perry, "The Open University of Great Britain," with a gathering of educators in the United States, March 25, 1971.

13. Ibid., 5.

14. The Open University: Prospectus 1972 (Morrison and Gibb Ltd., for the Open University, London & Edinburgh, 1971), 18. See p. 102 of the Prospectus, 1972 for a list of the present members of the Open University Council.

15. The composition of the Senate is as follows:

Faculty of Arts	11 members
" " Educational Studies	1 "
" " Mathematics	11 "
" " Science	10 "
" " Social Science	10 "
" " Technology	6 "
Applied Educational Sciences Unit	5 "
Research Officers	2 "
BBC Representatives	3 "
BBC members of Course-Teams	4 "
non-faculty, including Director of Studies, Local Centres, Regional Directors and Library	12 "

16. See The Prospectus, 1972, 103, for a list of the members of the Academic Advisory Committee.

17. The following is a list of Open University Committees, as of October, 1970 (from BBC/OU NEWSLETTER, Nos. 2 and 4, April and October, 1970):

Academic Advisory Committee

Council Committees
- Finance
- Senior Staff Salaries

Council and Senate Committees
- Planning Board
- Site Development (with seven Sub-Committees)
- Vice-Chancellor's
- Computer Co-ordinating
- Higher Degrees
- Library and Media Resources
- Tutorial Board
- Regional Services
- Students' Progress
- Examinations and Assessment

Project Working Groups
- to review the membership, functions and responsibilities of the Senate and the Vice-Chancellor's Committee, and to make recommendations "to achieve optimum levels of efficiency and participation"
- Administrative and Management Studies
- Admissions
- General Exemptions
- Preparatory Courses
- Publishing Policy
- Relations with Professional and Technological Institutions
- Social Amenities

Advisory and Liaison Committees

- on Wales
- on Publishing
- for Student Library Services
- on Adult Education and Higher Education
- on Services Education
- on Education and Training in Industry and Commerce
- on Administrative Studies, including Public and Social Administration, Business Studies and Management Training
- on Educational Technology
- on Postgraduate Medical Training
- on Computing
- on Research into BBC/NEC Gateway courses
- Ad Hoc Committee on Educational Studies
- BBC Liaison Committee
- Liaison Committee with the Disabled
- Local Authorities Liaison Committee
- Public Relations Committee
- Student Computing Service Liaison Committee

18. From BBC/OU Newsletter, No. 7, September, 1971. These Newsletters are prepared in the office of Mr. W.J.B. Robinson, Chief Assistant (Open University) to the Controller of Educational Broadcasting, BBC. Mr. Robinson's efforts to keep interested parties aware of developments within the University contribute in no small way to keeping it "open."

19. BBC/OU Newsletter, No. 2, April 1970.

20. See Catalogue 1971 for a complete list of materials available for sale. Catalogue 1971 is available through the Open University Press, c/o The Open University, Walton Hall, Walton, BLETCHLEY 4066, Bucks., England.

21. From D. G. Hawkridge, Educational Technology at the Open University (mimeographed paper, 1971), 2-4.

22. B. N. Lewis, "Course Production at the Open University II: Activities and Activity Networks", British Journal of Educational Technology, 2, No.2 (1971), 115.

23. For a more detailed description of Open University course development, see Prof. Lewis's articles in the British Journal of Educational Technology:

(i) "Course Production at the Open University I: Some Basic Problems," BJET, 2, No. 1, (1971), 4-13 and

(ii) "Course Production at the Open University II: Activities and Activity Networks", BJET, 2, No.2, (1971), 111-123.

24. If an observer views the Open University as a university, in a traditional sense, then the course-team approach to course development is of major importance. If, on the other hand, the emphasis is placed on the learner, (remembering that the physical separation of course developers and students in the Open University is most pronounced), then the value of the prepared materials for the student is not necessarily increased, because of the course-team approach. Interest in university circles in the course-team approach has placed

undue emphasis on the work of the faculty, instead of on the value of materials for the student.

25. See The Prospectus, 1972, 134, for a map of the University's twelve regions.

26. The Senior/Staff Tutors are referred to as Staff Tutors in The Prospectus 1972 and as Senior Tutors in Lewis, "Course Development at the Open University."

27. See The Prospectus, 1972, 105-111, for a list of the Staff Tutors by Faculty.

28. Three Staff Tutors are listed in The Prospectus 1972 for each of the regions of London, the West Midlands, and East Anglia. On the other hand, there are none listed for the North (of England), or for Northern Ireland.

29. The Prospectus, 1972. Appendices 1, 2, and 3, 124-133, give the regulations governing the awarding of degrees.

30. Prospectus, 1972. Chapter 5, 41-54, gives the Syllabus for the first level Courses.

31. Prospectus, 1972. Chapter 5, 55-79, gives the Syllabus for second-level courses, as well as the planned offerings at the third and fourth levels.

32. BBC/OU NEWSLETTER, No. 4, Oct. 1970, 5.

33. BBC/OU NEWSLETTER, No. 6, May 1971, 3.

34. Report of the Planning Committee, 2-3.

35. Perry, The Open University, 1.

36. Open University Press Release, Fall, 1970.

37. In September, 1971, a complete report of the admissions process for 1971 will be published.

38. Press Release, 2.

39. See the graph on page 15 of the Press Release for a representation of the age distribution for the first 28,635 applicants.

40. See Above, Chapter I, 20.

41. Press Release, 10.

42. Ibid., 2.

43. BBC/OU NEWSLETTER, No. 6, May 1971, 6.

44. Much of the information concerning financial matters has been made available through the co-operation of Mr. John Robinson of the BBC.

45. As quoted in an article by Tim Devlin in the Times Educational Supplement, "Tories aim to keep Open University," Aug. 14, 1970.

46. Prospectus, 1972. The full schedule of fees may be found on 83-89.

47. In reply to the Department of Education and Science, dated Nov. 10, 1970, the Council of the Open University stated that:

> The University is willing to examine, as a matter of urgency, the extent to which it could, by admitting qualified school-leavers, contribute directly to the solution of the national problem, but must point out:
> (a) that this could only be done with the good-will

and co-operation of the other institutions of higher education which must therefore be consulted;

(b) that the examination would necessarily involve small-scale pilot studies to determine whether such students would succeed in the Open University system of education;

(c) that there would be a need to determine how much demand for the Open University system of education would emanate from qualified school-leavers, and

(d) that the examination would necessarily include a study of the implications of admitting qualified school-leavers without, at the same time, extending the provision of opportunity to unqualified school-leavers.

The Department of Education and Science replied to this statement as follows:

The Secretary of State welcomes the University's willingness to consider the practicability of mounting pilot experiments in association with other institutions of higher education, aimed at combining the different types of courses offered, viz part-time courses in the Open University and full-time courses elsewhere; and, moreover, to examine urgently the extent to which it could, by admitting qualified school leavers, help directly to meet the increasing

demand for higher education. It will be greatly appreciated if the University will carry out the necessary consultations as soon as possible, with a view to reporting their conclusions by May 1971".

(Both these statements were taken from an Open University Press Release, November 10, 1970).

By July 26, 1971, no reply had been received from the Open University, but such a reply was expected "shortly."

Chapter III: Funkkolleg

The following list of sources is organized as follows:

1) articles of particular relevance to individual Funkkolleg projects,
2) articles which approach generally the subject of mediated remote studies, and
3) articles on similar projects in other areas of German education by authors involved in Funkkolleg activities.

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1. G. Kadelbach, "Einführung" (Introduction), in G. Kadelbach (ed.), Wissenschaft und Gesellschaft: Einführung in das Studium von Politikwissenschaft - Neuere Geschichte - Volkswirtschaft - Recht - Soziologie (Learning and Society: Introduction to the Study of Political Science - Modern History - Domestic Economics - Law - Sociology), (Frankfurt a/M, Fischer Bücherei, 1970), 11-23.
(Note: Prof. Dr. Gerd Kadelbach is the present Director of Central Division, Education and Training, of Hessian Broadcasting in Frankfurt a/M.)

2. (Note: The publishing house, Fischer Bücherei, presented the scripts and related material of Funkkolleg I in a series of pocket-books, in which No.1 (above) appeared as the first volume. Five other pocket-books, one per semester, complete the series.)

Vol. 2: K. Haüser: Domestic Economics (Fischer No. 853).

Vol. 3: I. Fetscher: Political Science (No.871).

Vol. 4: R. Wiethölter: Legal Studies (No. 920).

Vol. 5. P. Kluke: Modern History (No. 979).

Vol. 6: W. Rüegg: Sociology (No.1031).

3. H. Becker (co-ordinator), Hessischer Rundfunk, Funkkolleg Model I: Sozialwissenschaftliche Begleituntersuchung (Hessian Broadcasting, Funkkolleg Model I: Sociological Research), (INFRAtest, München, 1970).

4. G. Kadelbach, "Vorwort" (Foreword) in Klafki, Wolf, et al., Erziehungswissenschaft: Eine Einführung (Educational Science: An Introduction) Vol. I (Frankfurt a/M, Fischer Bücherei (with Verlag Julius Beltz, Weinheim), 1971), 13-25.

(Note: As was the case with Funkkolleg I, the Fischer Bücherei will provide the lectures and some other material for Funkkolleg II, in three volumes.)

5. A collection of articles of Funkkolleg II which had appeared in IBM Nachrichten (IBM News) Nos. 202-205 (Aug. 1970 to Feb. 1971) was published by IBM Deutschland, Sindelfingen in February of 1971. It includes the following articles:

   a) G. Kadelbach, Demokratisierung, Objektivierung und Partizipation als Impulse für ein Fernstudium im Medienverbund

   b) W. Klafki, Zielsetzung, inhaltlicher und methodischer Aufbau des Quadriga-Funkkollegs "Erziehungswissenschaft"

   c) K. Rebel, Probleme bei der Erstellung des Begleitmaterials zu Funkkollegs

d) Margarete Gross, U. Allinger, H.-G. Busch, T. Rütter, Computerunterstützte Prüfungen für ein Fernstudium im Medienverbund

e) L. Gallus, Computerunterstützte Uebungs- und Prüfungs Systeme

6. K. Rebel, "Zur didaktischen Struktur des Funkkollegs Erziehungswissenschaft", in Die Deutsche Schule, Vol. 62, No. 3, March 1970, 175-183.

(Note: Karlheinz Rebel is with the German Institute for Remote Studies, Tübingen, and has held responsiblity for the preparation of accompanying materials in several of the Funkkolleg projects.)

7. In the series, Theorie und Praxis der Erwachsenenbildung (Theory and Practice of Adult Education), published by Georg Westermann, Braunschweig, and edited by the Paedagogical Centre of the German Adult Education Union, there appeared Fernstudium - Medienverbund - Erwachsenenbildung (1970), in which the following relevant articles appeared:

a) G. Kadelbach, "Massenmedien, Universität und Volkshochschule als Glieder einer didaktischen Montage" (Mass Media, University and Adult Education Centres as Elements of an educational "montage"), 40-85, and

b) J. Weinberg, "Studienbegleitzirkel im Medienverbund" (" 'Discussion Groups' in a multi-media mix"), 101-119.

8. H. Hoffbauer, "Die Studienbegleitzirkel des Funkkollegs Erziehungswissenschaft", in FilmBildTon, Vol.20, No.9, Sept. 1970, 25-32.

9. K. Rebel, "Bericht über die Planung des QUADRIGA-Funkkollegs III; Mathematik: (Report on the Planning of Funkkolleg III: Mathematics), in Programmiertes Lernen, Unterrichtstechnologie und Unterrichtsforschung, Feb. 1970, 90-99.

10. K. Flammann, "Wissenschaftliche Begleituntersuchungen im Rahmen des Quadriga-Funkkollegs Mathematik", in FilmBildTon, Vol. 20, No. 9, Sept. 1970, 19-21.

11. Quadriga-Funkkolleg SPRACHE: Eine Einführung in die moderne Linguistik: an information brochure, with application form (available from the participating agencies).

12. Note should be made of the reading list provided in FilmBildTon, Vol. 20, No. 9, Sept. 1970, which gives a large number of books and articles on Funkkolleg, Telekolleg, and related projects.

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13. K. Rebel, "Wissenschaftliche Ausbildung auf visuell-auditivem Wege - Zur Frage medienadäquater Lehrformen und fachadäquater Medien", in Ueberlegungen zum Studium im Medienverbund (University of Bielefeld, 1970), 31-48.

14. K. Rebel, "Fernunterricht und Fernstudium im Medienverbund", in Beiträge zu den Fortbildungskursen des Goethe-Instituts für Deutschlehrer und Hochschulgermanisten aus dem Ausland (München, Goethe-Institut, 1970), 146-155.

15. K. Rebel, "Modelle der Kooperation von Hochschulen und Rundfunkanstalten," in Neue Sammlung, Vol. 10, No. 5, Sept./Oct. 1970, 459-470.

16. K. Rebel, "Fernstudium im Medienverbund", in Umschau in Wissenschaft und Technik, Vol. 71, No. 7, April 1, 1971, 230-232.

17. K. Rebel, "Moderne Unterrichtsformen und Medien im Dienste der politischen Bildung," in Aus Politik und Zeit Geschichte (supplement to the weekly newspaper Das Parlament), March 15, 1969, 3-16.

18. K. Rebel, "Der Beitrag des Fernstudiums zu einer Reform der Lehre in Schule und Hochschule: Zwei Fernstudienprojekte des Deutschen Instituts für Fernstudiens aus dem Fachbereich Englisch," in Die Neueren Sprachen, No.8, 1980 (new series).

19. K. Rebel and M. Hättich, "Der Direct-Teaching Schulfernsehversuch der Troika," in Gesellschaft Staat Erziehung, No.4, 1970.